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University of the State of New York 395372

High School Department

Bulletin 1 March 1899

Univ. S. N. Y. High School Dept.

REPORT OF DIRECTOR

James Russell Parsons jr

1898

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Bulletin 1 March 1899

REPORT OF DIRECTOR, 1898

James Russell Parsons jr

To the Secretary of the University of the State of New York

I submit herewith the following report of the high school department for the year ending July 31, 1898[a]:

Reorganization. In June 1898 the departments into which the work of the regents is divided were reorganized as follows:

1 Administrative, including charters, finances, legislation, printing and publications and all other work not assigned to any other department.

2 College, including universities, professional, technical and other special schools and all matters pertaining to degrees or licenses.

3 High school, including academies and all interests of secondary education.

4 Home education, including all work heretofore done under the name of the extension department.

5 State library.

6 State museum, including all scientific interests.

This report made in accordance with the new organization, includes the academic examination work heretofore done by the examination department, and also the work of the inspectors and such other matters as pertain to the interests of secondary education.

Secondary schools. The following table shows the number of high schools and academies for 1870, 1875, 1880, 1885, and for each year from 1886 to 1898:

---

[a] All statistics in this report are for the year ending July 31, 1898, but later information is given in various places up to Jan. 15, 1899 when the report was completed.

Comparative number reporting

	1870	1875	1880	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898
High schools......	62	121	153	191	187	199	208	226	231	235	252	283	314	373	421	465	514
Academies	125	107	86	79	75	74	75	81	104	111	114	118	121	131	128	119	131
Total........	187	228	239	270	262	273	278	307	335	346	366	401	435	504	549	584	645

Between 1870 and 1888 there was an increase of 141 or more than 227% in high schools. From 1888 to 1898 the number has increased by 311 or 153%. Within the full period of 28 years the increase has been 452 or 729%.

From 1870 to 1888 there was a decrease of 50, or two fifths, in the number of academies. Beginning with 1889 the number has increased steadily each year except in 1896 and 1897, when there was a decrease of 12. In 1898 there were 131 or 6 more than in 1870, a growth in 10 years of 56 or 75%.

All academies which have been added to the University roll since 1888 and which are now on this roll are Roman catholic institutions except Cascadilla school, Ithaca; Friends' academy, Locust Valley; Keuka institute; New York military academy, Cornwall-on-Hudson; Pratt institute high school, Brooklyn; St Faith's school, Saratoga; Westerleigh collegiate institute, Staten Island and Round Lake summer institute.

Counting together all secondary schools these figures show a growth in 10 years of 367 or 132%.

Secondary schools in the University, June 30, 1898

CLASSIFICATION	NUMBER	FACULTY		STUDENTS IN ATTENDANCE			NET PROPERTY	EXPENDITURES
	1898	Men	Women	Boys	Girls	Total		
High schools.	514	781	1512	23 482	31 593	55 075	a$9 339 436 12	ac$2 239 226 45
Academies...	131	368	620	5 245	6 022	11 267	b15 666 249 46	d1 482 609 25
Total.....	645	1149	2132	28 727	37 615	66 842	$25 005 685 58	$3 721 835 70

In 1897 the average salary of high school teachers was $554.58, of academy teachers (including fees) $521.43. In 1898 the corresponding figures were $615.11 and $606.61, an increase of $60.53 and $85.18.

In 1897 the 465 high schools expended $1,892,960.16 or $43.10 for each student. In 1898 the 508 high schools that reported expenditures

---

[a] Including the two state institutions for the blind. [b] Including figures for collegiate departments of Keuka, Holy Angels, Pratt institute and medical, pharmacy and collegiate departments of Syrian protestant college. One special school is also included. [c] Not including six schools in greater New York which did not report. [d] Including one special school.

expended $2,239,226.45 or $43.91 for each student, an increase in one year of $.81.

In 1897 the 119 academies expended $1,391,286.02 or $145.71 for each student. In 1898 the 131 academies expended $1,482,609.25 or $131.59 for each student, a decrease in one year of $14.12.

Counting together all secondary schools these expenditures show a cost for each student of $61.43 in 1897 and $59.78 in 1898.

The analysis of expenditures given below includes items that greatly increase expenditures for academies but either do not appear at all or to a comparatively limited extent in the maintenance of high schools. If we exclude for example items 8, 9, 10, 13 and 15 the comparative cost for each student is:

	1897	1898
High schools	$35 64	$36 97
Academies	55 38	72 84
All secondary schools	39 16	43 46

But when all allowances have been made we find that private means are much more freely expended for secondary education than money raised by taxation.

Expenditures

	HIGH SCHOOLS		ACADEMIES	
	1897	*a*1898	1897	1898
Additions. improvement and repairs				
1 Grounds	$8 918 74	$9 589 13	$15 179 04	$21 939 86
2 Buildings	209 866 97	235 834 59	140 094 91	78 903 28
3 Furniture	23 257 08	39 653 14	20 786 87	20 666 24
4 Apparatus	38 622 50	85 792 52	9 097 99	8 118 80
5 Libraries	39 444 96	49 015 94	5 876 04	8 598 54
6 Salaries for instruction	1 205 105 79	1 410 447 41	552 602 76	572 182 69
7 Fees to teachers	....	....	30 853 98	27 149 28
8 To other officers and employees	101 825 90	110 870 16	96 651 70	100 690 72
9 Prizes, scholarships, etc	1 177 26	1 760 03	9 192 48	11 851 85
10 Given or lent to students	....	....	19 952 73	29 717 66
11 Interest on debts	8 547 65	25 538 44	48 983 87	46 428 09
12 Insurance	11 605 17	9 561 87	15 092 19	15 368 98
13 Fuel and lights	65 004 57	71 611 48	73 180 64	70 958 12
14 Other incidentals	19 726 64	19 939 64	24 545 75	26 295 01
15 All other purposes	160 356 98	169 612 10	829 795 57	449 246 18
Total	$1 892 960 16	$2 239 206 45	$1 891 286 02	$21 482 609 25

Students. In 1888 there were 31590 secondary school students as compared with 66342 in 1898, an increase of 110%. In 1888 only 15858 were reported as holding the preliminary certificate, while in 1898 the corresponding number was 37819, an increase of 138%.

---

a Not including six schools in Greater New York which did not report.

In 1888, 1236 graduates were reported, in 1898, 4818, a growth of 290% or nearly fourfold. But in 1888 those graduating on local credentials were not included. If we make a proportionate allowance for this fact, the growth in graduates since 1888 will still be more than threefold.

This 10 years' increase in secondary school students is abnormal as may be seen from the fact that the growth in attendance on our public elementary schools has been less than 20%.

Governor Roosevelt in his first annual message says: 'In comparison with results attained and with other expenditures the state appropriations for high schools are small. In 1898 the state expended about $150 for each convict in her prisons and $185.31 for each lunatic in her asylums. The cost to the state of each student in her high schools was $4.45.' The fact that more than 90% of the total cost of New York secondary schools is paid from local sources shows the value of a high school training in the eyes of those most directly concerned.

I believe it was Victor Hugo that said 'He who opens a school closes a prison.' Governor Black stated last year in his annual message that fewer would be confined in other institutions later in life if more were earlier confined in schools. Even with our boasted generosity in educational matters we are ready to expend public money more freely for cure than for prevention. We pay our superintendent of state prisons $6000 a year, our state superintendent of public instruction only $5000.

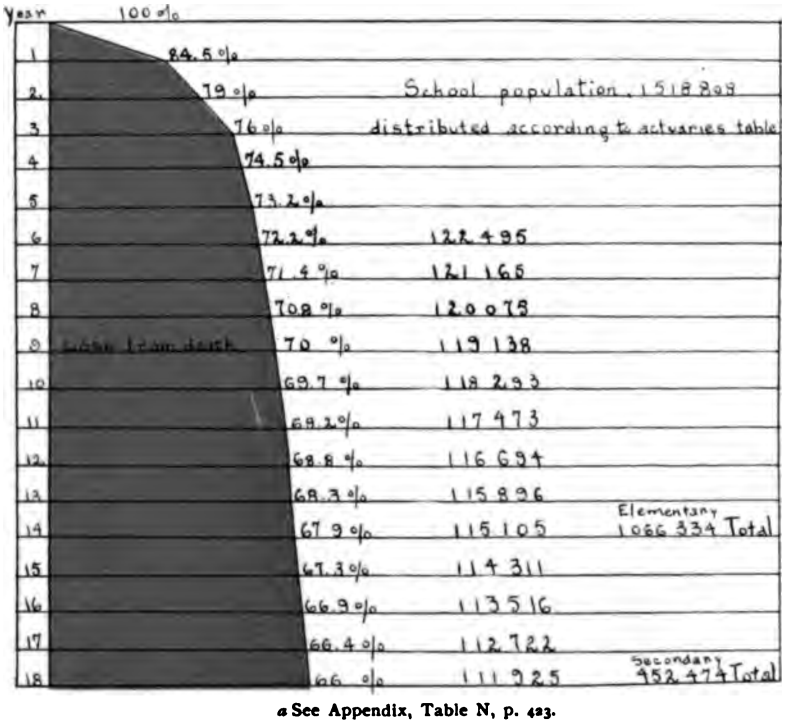
Students in secondary schools as graded June 30, 1898

	NO.	STUDENTS	
		Boys	Girls
High schools			
High schools	267	19 202	26 341
Senior "	24	666	919
Middle "	61	1 287	1 450
Junior "	160	2 301	2 860
a Special "	2	26	23
Total	514	23 482	31 593
Academies			
Academies	99	*d* 4 474	5 242
Senior academic schools	3	64	117
Middle " "	8	179	214
Junior " "	19	433	309
b Below grade	1	35	....
c Special	1	? 60	? 140
Total	131	5 245	6 022
	645	28 727	37 615
Grand total	645	66 342	

a New York institution for the blind, New York. New York state school for the blind, Batavia.
b St Austin's school, Staten Island.
c Round Lake summer institute.
d De Veaux students not included. No report.

[a] Graphic representation of actuaries table

Line of mortality



[a] See Appendix, Table N, p. 423.

This table shows an increase in secondary students over 1897 of 12878 or 24%. The total children of school age (5-18) reported to the department of public instruction in 1898 was 1,518,808, a decrease over 1897 of 150,141 or 9%; the total enrolment reported in 1898 was 1,168,994, a decrease over 1897 of 34205 or 3%. The decrease in 1898 in school population and school enrolment suggests inaccuracies in the reports to the department of public instruction and should be studied with the returns for other years. In any event, however, the increase in secondary students is extraordinary and is verified by corresponding increases in the number of secondary schools and in the proportion of graduates.

School population and enrolment. The misleading statement that less than 5% of the school population ever enter the high school has induced us to ascertain how many should enter the high school and to compare this number with the number actually found there.

If we divide the number enroled in the secondary schools in one year (66342) by the school population (1,518,808) the quotient is 4.3%. The common statement that less than 5% of the school population ever enter the high school is based on this method.

Reasoning in the same way, substituting for the number in the secondary schools that part of the school population shown by the actuaries table to be five years of age (122,495), and dividing as before by the school population, we show that less than 9% enter the first primary grade, or carrying the same reasoning further, substituting for the number in the secondary schools the number of births in one year that produce the school population (as shown by the actuaries' table), and dividing this number (169,700) by the school population, we show that less than 12% were ever born.

With an eight year elementary course and a four-year high school course, it is clear that, disregarding loss from death and other causes and distributing the school population equally among the 12 classes, there could not be in one year either in the high school or in any four classes in the elementary school more than one third of the school population. In other words, if a stated number of pupils entered school each year, and all remained to complete an eight-year elementary course and a four-year secondary course, only $\frac{4}{12}$ or 33⅓% could be in the secondary course at once. If we consider loss by death only and make no allowance for failure of promotion from illness and other causes the high school enrolment is three times as large as commonly stated. Not only death however but lagging from illness and other causes must be considered in order to arrive at a reasonable conclusion.

From the actuaries table it is seen that of persons born, 73% reach the legal school age of five years, 68% reach 14 years, the age of high school entrance, and 66% reach 18 years, the age of high school graduation.[a] But inquiry shows that by reason of slow progress certain pupils fail of promotion at the regular time. Applying this correction[b] and distributing the school population between the elementary and the secondary schools it is found that 129,047 could be enroled in the secondary schools, while 66342 or 51% are so enroled. The corresponding per cent for the elementary schools is 80; it is therefore seen that though the elementary school is aided by the compulsory education law and by the greater facilities which are offered those seeking an elementary education, the secondary school makes 64% as good a showing. Both results would be still more favorable if we considered all children of school age enroled in private schools.[c]

As the actuaries' table is based on insurable lives only, i. e. those passed by medical examination as in normal health and with full expectancy, it follows that the mortality is greater than is indicated and as the number of students over 18 years of age in the secondary schools is more than offset by the greater number of pupils over 14 who are still in the grades, the conclusion is conservative.[d]

Table showing method of obtaining ratio of actual enrolment to possible enrolment

	Elementary	Secondary	Total
School population from the forthcoming report of the department of public instruction distributed according to actuaries' table.	1 066 334	452 474	1 518 808
School population from the forthcoming report of the department of public instruction distributed according to actuaries' table corrected for failure of promotion, possible enrolment.	1 389 761	129 047	1 518 808
Elementary enrolment obtained by deducting 55075 in high schools from 1,168,994, total given by department of public instruction. Secondary enrolment obtained by adding 55 075 in high schools to 11 267 in academies.	1 113 919	66 342	1 180 261
Ratio of actual enrolment to possible enrolment.	80%	51%	

[a] Returns from 73 schools give 17.74 as the average age.

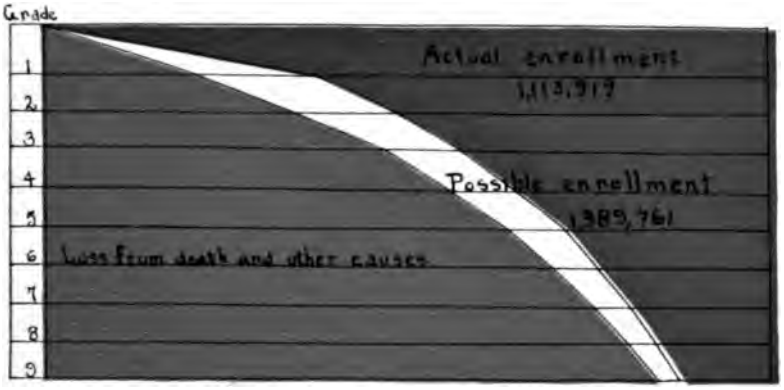
[b] Obtained from reports from 20 districts differing in density of population and in variety of employment. *See* Appendix.

[c] In 1898 the department of public instruction reported 81448 pupils enroled in private schools

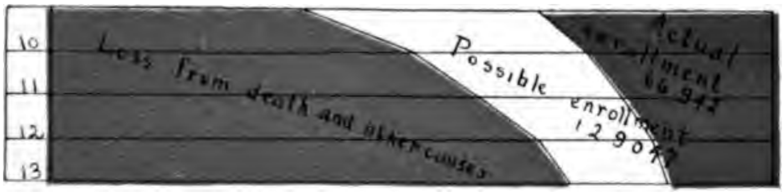
[d] School statistics in a city of more than 25000, where the average age of graduation is 18.50 give 10.94 as the per cent of secondary students more than 18 years of age, 11.95 as the per cent of elementary pupils more than 14 years of age.

Graphic representation of possible and actual enrolment

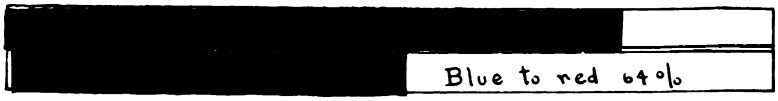
Elementary



Secondary



Comparative ratio of actual to possible enrolment



academic diplomas issued in 1896 and 1897 included both the old and the new forms. Notwithstanding the great difference in the grade of these credentials under the two systems the number issued in 1898 was nearly as great as in 1896. Only about half the number of advanced diplomas was issued in 1898, as the time was too short to overcome the increase in standards.

Specially gratifying is the great increase in 1898 in honor credentials. 957 honor preliminary certificates and 406 honor higher credentials were issued as compared with 535 and 238 respectively in 1897.

The growth in certificates indicates more clearly what has been done under the new system. A corresponding growth in academic diplomas and advanced diplomas will doubtless occur in 1899.

Methods of apportionment. The report for 1898 shows that contrary to the prevalent impression, the amount now granted for credentials is much less than half the total, amounting in 1898 to only $71620. Other grants were as follows:

For $100 quota	$51 100
For attendance	46 730 82
For books and apparatus	39 799 66
	$137 630 48

Our attention has been called recently to similar work in Minnesota, where $400 is apportioned annually to each school that has 'a regular course of study embracing all the branches prescribed as a prerequisite for admission to the collegiate department of the University of Minnesota,' and which is registered as meeting all requirements. To receive this $400 a school must offer an approved four-year high school course based on an elementary course of not less than eight years.

Under the Horton law each registered secondary school is granted $100 according to the Minnesota system except that we make no distinction between a large and a small school provided each maintains the standard of its grade.

In New York one cent is allowed under the regents ordinances for each day's attendance of each academic student. Heretofore academic students counted for grants have included only those who had earned regents preliminary certificates, the requirement for admission to a secondary school. In Minnesota all non-resident students applying for admission to high schools must pass the examinations prescribed for third grade teachers licenses. December 15, 1898 the ordinance of the regents excluding from grants for attendance all who had not secured

Any registered high school or academy that bases promotion on class work and local examinations may receive $5 for each regular local academic certificate or diploma issued, on the certificate of two University inspectors that the requirements for the local certificate or diploma are clearly above the minimum prescribed for the corresponding University credential.

Teachers in secondary schools. In the discussion of this proposed amendment to the ordinance it was pointed out that an apportionment on local credentials might not be safe till the University had in operation some method of certification of teachers in secondary schools. The following illustrates our present weakness in this respect. A short time ago a principal told a University inspector that he was somewhat nervous about his ability to take charge of a new school to which he had been called as he would have to teach Virgil and Caesar and he had himself studied Latin only six weeks. Excluding college graduates the best teachers as a class to-day in New York high schools are normal school graduates, and yet it is well known that under the system of licensing teachers that has prevailed in New York a grammar school graduate might enter a normal school with only the qualifications exacted for admission to a high school, and on graduation from a two-year course receive a license to teach for life in a high school. There are still many normal school graduates teaching in high schools who had only these qualifications. There has been a change for the better in this respect. Admission requirements have been increased and courses as a rule have been lengthened, but a normal school diploma even now does not represent by any means a course with admission requirements equivalent to high school graduation, nor is the course long enough in the absence of such admission requirements to afford both the preliminary and the professional training which a high school teacher should have as a minimum.

In laws of 1895, ch. 1031, the state declared that after January 1, 1897, no person should be 'licensed to teach in the primary and grammar schools of any city authorized by law to employ a superintendent of schools who has not had successful experience in teaching for at least three years, or in lieu thereof has not completed a three-year course in and graduated from a high school or academy having a course of study of not less than three years . . . and who subsequently to such graduation has not graduated from a school or class for the professional training of teachers having a course of study of not less than 38 weeks.'

The least that the secondary schools ought to accept from their teachers is a college education or its equivalent, to which at least one year's professional training has been added, if such training was not a force must be approved by a University inspector. With this protection and that afforded by the proposed ordinances touching the certification of teachers, it would be easy to recognize peculiar fitness for special lines of work. Each teacher must necessarily hold the license required by law, but this, however satisfactory for the primary and grammar grades is in no case a guaranty of fitness for teaching special subjects in the higher work of the secondary school.

We earnestly desire from each secondary school principal a frank opinion of the proposed ordinances regarding the certification of teachers by University inspectors, and the method of apportionment either for local credentials as suggested above or on the basis of the number of duly certified academic teachers employed throughout the year. The original resolutions of the regents show that their action on these questions will depend on the views of those most directly concerned.

Qualifications and average salary of secondary principals and teachers. In December 1898 the following circular was sent to New York secondary schools:

Principal

DEAR SIR: Kindly return this blank at your earliest convenience with the following information relative to yourself and to your academic teachers in language, literature, mathematics, science, history or social science:

1 Total number of teachers (not including principal), giving full or partial time to academic work.

2 Number of college graduates not including principal. (Give in each case college and degree, salary, professional training and experience)

3 Number of normal graduates not including principal or those included in 2. (Give in each case school and course, salary, professional training and experience)

4 Number of high school or academy graduates not including principal or those included in 2 or 3. (Give in each case school and course, salary, professional training and experience)

5 Number, not including principal, whose qualifications are not included in 2, 3 or 4. (Give qualifications and salary in each case)

6 Qualification of principal. (Give name, college and degree, or school and course, salary, professional training and experience)

Answers to these questions which should be as brief as possible will be considered confidential, and summaries alone will be published. Through this information the University hopes to secure results beneficial both to principals and teachers.

Very truly yours
JAMES RUSSELL PARSONS JR

Replies to this circular are summarized in the following tables:

Of the 519 principals reporting, 209 are college graduates with at least two years' experience in teaching. Their average salary is $1439. Only six principals are reported as college graduates with less than two years' experience. Their average salary is $700 or less than half that of the more experienced. Principals in 48 schools are both college and normal graduates with at least two years' experience. Their average salary is $1150 or $289 less than that of experienced college graduates without normal school training.

Principals in 168 schools are normal graduates with at least three years' experience in teaching. Their average salary is $930. In 15 schools principals are normal graduates with less than three years' experience. Their average salary is $617 or $313 less than that of the more experienced.

In 42 schools principals are high school graduates with at least three years' experience. Their average salary is $966.

In 31 schools, principals are not college, normal or high school graduates. Their average salary is $1061. In this class, however, are included many experienced teachers who have had partial college, high school or normal courses or some special training that may be considered an equivalent to graduation.

Of the 275 principals that reported in 1888, 203 or 74% were educated in colleges, 38 or 14% in normal schools, 34 or 12% in academies.

Of the 519 principals that reported in 1898, 263 or 51% are college graduates, 183 or 35% are normal graduates, 42 or 8% are high school graduates, 31 or 6% had other training.

In comparing 1888 statistics with those of 1898 we should remember that those of 1888 included all who had taken partial courses while those of 1898 include graduates only. It is clear nevertheless that the proportion of principals who are college graduates has decreased. This fact is accounted for in part by the unprecedented growth in one, two and three-year secondary schools, all of which were classed as academies or high schools in 1888.

In four-year secondary schools reporting in 1898, 197 or 69% of the principals are college graduates, 64 or 22% are normal graduates, 12 or 4% are high school graduates, 13 or 5% had other training.

Qualifications and average salary

	NUMBER						
	College		Normal		College and normal	High school	Other
Experience	Two years	Less than two years	Three years	Less than three years	Two years	Three years	
High school	139	2	59	3	34	11	12
Senior	9	.....	8	.....	3	6	1
Middle	20	1	29	4	3	7	6
Junior	19	2	69	8	5	17	10
Academy	19	.....	2	.....	3	1	1
Senior	1	1	.....	.....	.....	.....	.....
Middle	1	.....	.....	.....	.....	.....	.....
Junior	1	.....	.....	.....	.....	.....	1
Special	.....	.....	1	.....	.....	.....	.....
Total	209	6	168	15	48	42	31

Qualifications and average salary

	NUMBER								
	College		Normal		College and normal		High school		Other
Experience	Two years	Less than two years	Three years	Less than three years	Two years	Less than two years	Three years	Less than three years	
High school	282	62	335	70	16	7	199	11	93
Senior	4	5	20	4	....	.....	5	1	8
Middle	5	.....	38	17	....	.....	14	2	11
Junior	9	4	38	17	....	.....	19	5	14
Academy	56	7	15	.....	2	.....	19	7	16
Senior	....	.....	....	.....	....	.....	....	.....	1
Middle	2	.....	....	.....	....	.....	2	.....	....
Junior	....	1	....	.....	....	.....	....	1	....
Special	....	.....	6	.....	....	.....	2	.....	1
Total	358	79	452	108	18	7	260	27	144

This table shows that of 1453 secondary teachers, not including principals, 462 or 32% are college graduates, 560 or 39% are normal graduates, 287 or 19% are high school graduates and 10% had other training. In this last class are included many who have had partial courses or special training that may be considered an equivalent to graduation from college, normal or high school.

Those who have experience and both college and normal training receive the highest average salary, $1272. Next in order come experienced college graduates, $893, next those who are not college, normal or high school graduates, $615, both college and normal graduates without experience, $586, college graduates without experience, $523, experienced normal graduates, $513, normal graduates without experience, $401, inexperienced high school graduates, $372.

Calendar of high school examinations, 1898

DATE	PLACE	SUBJECTS
1897		
Ag 13-14	Chautauqua	5 academic
1898		
Ja 24-28	536 secondary schools	61 academic
Mr 23-25	517 secondary schools	25 academic
Je 13-17	552 secondary schools	81 academic

ACADEMIC EXAMINATIONS

	1889	1892	1893	1894	1895	1896	1897	1898	PER CENT INCREASE IN						
									3 *yr*	4 *yr*	5 *yr*	6 *yr*	7 *yr*	8 *yr*	9 *yr*
Acad. and high schools taking examinations	304	357	393	417	467	517	557	608	17	29	37	54	70	83	100
Answer papers written	193 197	278 907	302 471	357 908	388 945	396 760	421 588	446 837	44	56	85	101	105	118	131
Answer papers claimed by schools	107 149	176 516	185 677	238 319	259 932	256 599	268 953	303 361	65	73	122	143	139	151	183
Answer papers allowed by Univ.	99 079	155 869	165 676	211 533	231 231	224 403	239 671	271 999	57	67	113	133	126	143	174
Answer papers rejected by Univ.	8 070	20 647	20 001	26 786	28 701	32 196	29 282	31 362	156	147	232	256	299	263	288
Per cent of papers claimed allowed by University	92	88	89	89	89	87	89	90	—4	—3	—3	—3	—5	—3	—2
Per cent of papers claimed to total no. written	55	63	61	67	67	64	64	68	8	6	12	12	9	9	13
Per cent of papers allowed to total no. written	51	56	55	59	59	56	57	61	5	4	8	8	5	6	10
Per cent of honor papers to total no. accepted	....	....	20	20	21	20	19	21	....	....	....	....	....	....	....

This table shows an increase in 1898 of 25249 in answer papers written, of 34408 in answer papers claimed and of 32328 in answer papers allowed by the University. The proportion of papers claimed to total number written is larger than ever before, being 4% greater than for the past two years, and yet the per cent of claimed answer papers allowed by the University is greater than for any year since 1889. The proportion of papers allowed to total number written is the highest yet reached.

From these statistics it is evident that students have more than kept pace with higher standards. Statements therefore that standards required by these tests are being raised too rapidly are clearly without foundation. The fact that 31362 answer papers which were claimed by the principals were rejected by the University, an increase of 28890 over 1889, shows on the other hand why regents credentials are of more value than local certificates.

Since the last report there has been an increase of 51 in the number of schools taking regents examinations, the number in 1898 being exactly double that in 1889. Within this decade there has been a growth of 131% in answer papers written, of 183% in answer papers claimed and of 174% in answer papers allowed.

The following summary indicates the increase or decrease in the number examined in each subject in 1898 as compared with 1897. Latin and Greek composition are followed by blanks in the 1897 column because these subjects were first given as separate papers in that year.

Of the 81 subjects 51 show an increase in 1898 over 1897 in papers written. This increase exceeds 4500 in spelling; 3600 in geography; 1600 in algebra; 1500 in elementary English; 1400 in English 1st year; 1100 in Latin 1st year; 900 in New York history and civics; 700 in arithmetic, physical geography, and bookkeeping; 600 in Caesar's *Commentaries* and physiology; 500 in German 1st year; 400 in rhetoric, plane geometry and economics; 300 in American selections and botany; 200 in English 2d year, English composition, English selections, French 1st year, Virgil's *Aeneid*, Latin composition, zoology and stenography, 50 words a minute; 100 in French 2d year and advanced U. S. history.

The decrease in papers written in 1898 exceeds 900 in English reading; 800 in drawing; 700 in advanced English; 600 in advanced arithmetic; 500 in American literature; 400 in advanced drawing; 100 in English literature, Greek, 1st year, astronomy, geology, general history, and Roman history.

There is a decrease in five subjects in English language and literature, in one modern foreign language subject, in three subjects in Greek, in two subjects in mathematics, in five science subjects, in four history subjects, and in six other subjects. All subjects in Latin and French show an increase.

The fluctuations in the figures for the two years 1897 and 1898 are most noticeable in drawing and New York history, and somewhat less marked in American literature, English reading, Greek 1st year, Roman history, economics and bookkeeping.

SUBJECT	1897		1898	
	Increase in no. examined	Decrease in no. examined	Increase in no. examined	Decrease in no. examined
Spelling	2251	....	4556	....
English, elementary	3730	....	1567	....
Arithmetic	1838	....	713	....
Geography	1602	....	3698	....
English, 1st year	284	....	1468	....
English, 2d year	525	....	299	....
English, 3d year	87	....	44	....
Advanced English	....	535	....	738
English composition	217	....	253	....
Rhetoric	16	....	455	....
English literature	....	131	....	158
American literature	332	....	....	537
English reading	126	....	....	910
English selections	235	....	244	....
English prose	29	....	....	13
English poetry	....	2	1	....
American selections	24	....	391	....
German classics in English	1	....	....	1
French classics in English	Same as	last year	....	2
Latin classics in English	12	....	....	13
Greek classics in English	16	....	....	16
German, 1st year	461	....	577	....
German, 2d year	634	....	14	....
German, 3d year	152	....	....	89
French, 1st year	154	....	288	....
French, 2d year	140	....	182	....
French, 3d year	19	....	9	....
Latin, 1st year	1515	....	1145	....
Latin, 2d year	439	....	19	....
Caesar's Commentaries	467	....	604	....
Latin, 3d year	8	....	11	....
Sallust's Catiline	56	....	96	....
Cicero's Orations	292	....	32	....
Ovid's Metamorphoses	....	11	22	....
Virgil's Aeneid	4	....	233	....
Virgil's Eclogues	....	60	56	....
Latin comp	....	....	244	....
Greek, 1st year	281	....	....	106
Greek, 2d year	17	....	7	....
Xenophon's Anabasis	68	....	....	34
Homer's Iliad	....	10	27	....
Greek, 3d year	....	1	12	....
Greek comp	....	....	....	26
Advanced arithmetic	....	1095	....	637
Algebra	871	....	1618	....
Advanced algebra	....	19	20	....

SUBJECT	1897		1898	
	Increase in no. examined	Decrease in no. examined	Increase in no. examined	Decrease in no. examined
Plane geometry	260	....	495	....
Solid geometry	90	....	76	....
Plane trigonometry	12	....	....	17
Spheric trigonometry	9	....	26	....
Astronomy	....	156	....	195
Physics, part 1	314	....	....	44
Physics, part 2	....	36	....	9
Chemistry, part 1	276	....	....	70
Chemistry, part 2	84	....	58	....
Physical geography	450	....	733	....
Geology	....	93	....	116
Botany	38	....	388	....
Zoology	213	....	237	....
Physiology and hygiene	3668	....	635	....
General history	74	....	....	110
Greek history	....	42	....	58
Roman history	335	....	....	151
English history	816	....	....	77
French history	6	....	63	....
U. S. history	2474	....	53	....
Advanced U. S. history	4	....	106	....
1st read. course in U. S. hist.	....	8	76	....
2d read. course in U. S. hist.	....	14	21	....
New York history	....	174	965	....
Civics	92	....	930	....
Economics	....	263	472	....
Stenography, 50 } words	28	....	287	....
Stenography, 75 } per	25	....	25	....
Stenography, 100 } minute	48	....	....	32
Bookkeeping	....	193	747	....
Home science	....	95	....	84
Drawing	1692	....	....	894
Advanced drawing	....	129	....	436
Psychology	....	45	....	67
Ethics	....	50	....	1

Criticism of question papers

	Satisfactory	Too long	Too short	Too difficult	Too easy	
1893	87 %	2.6%	.1%	9.1%	1.2%	100%
1894	91.2	2.3	.1	5.5	.9	100
1895	92.2	1.6		5.6	.6	100
1896	91.2	1.5		6.9	.4	100
1897	88.1	4.		7.4	.5	100
1898	92.9	1.4		5.5	.2	100

This table shows that about 90% of all criticisms of question papers received since 1893 when the plan of detailed reports was instituted

English, 1140 or 85% were satisfactory; of 147 reports in first year English, 133 or 90% were satisfactory; of 79 reports in second year English, 65 or 82% were satisfactory; of 42 reports in third year English, 36 or 86% were satisfactory; of 1035 reports in advanced English, 890 or 86% were satisfactory; of 749 reports in English composition, 719 or 96% were satisfactory; of 797 reports in rhetoric, 629 or 78% were satisfactory; of 326 reports in English literature, 254 or 78% were satisfactory; of 342 reports in American literature, 327 or 95% were satisfactory; of 232 reports in English reading, 184 or 79% were satisfactory.

In September 1898 the following circular was sent to New York superintendents and teachers:

Canandaigua, N. Y. 29 *Sep.* 1898

MY DEAR SIR: At a meeting of the executive committee and other officers of the Associated academic principals of the state of New York, held in Canandaigua, Saturday, September 24, I was directed to send the annexed questions to every secondary school principal in the state.

We earnestly desire a **frank opinion** on this subject from each principal who is interested in regents examinations.

We hope you will answer these questions and return the sheet to me as soon as convenient. The answers will be tabulated and the result announced at the December meeting.

Fraternally yours
J. C. NORRIS

1 Have the requirements in English for the past two years as given in the syllabus been in accord with the highest interests of your school?

2 Please give reason for your answer.

3 Do the works from which subjects for English essays or compositions have been selected, meet with your approval?

4 If not, please state the books to which you have objections.

5 What modifications, if any, would you suggest as tending most to harmonize the scope of the requirements with the legitimate demands for English work in our schools?

6 Were the questions in English of last January, March and June satisfactory?

7 If not, please state your objection.

8 Have the questions in English for the last two years been worded so as to be clearly understood by your pupils?

in other subjects was entirely satisfactory. Prin. Lovell reported as follows: 'The general sentiment among the principals was largely in favor of the syllabus as it is. Admiration was expressed for the arrangement of courses of study and of the outline of work presented to us by those in charge of the regents office, and the prevalent opinion was that it would be difficult indeed to make any changes to the advancement of educational interests in the state.'

Here is an evident contradiction. The proportion of unfavorable criticisms on the syllabus is the same as the proportion on the English papers, yet the syllabus was considered satisfactory in June.

2 The criticisms on the syllabus seem to favor the following: the dropping of the history of the language, an increase in grammar, fewer texts in literature, and the introduction of some literature into elementary and into advanced English. Some desire less composition in elementary and in advanced English and a few advocate the transfer of false syntax from advanced English to English composition.

3 Question 3 reads: 'Do the works from which subjects for English essays or compositions have been selected meet with your approval?' 68 answer 'yes,' 33 answer 'no.' Criticisms fall as often on authors and texts that have been in use for years as on those lately introduced. They touch on almost every book in each course, but do not indicate any considerable degree of dissatisfaction with any one book.

4 Returns in answer to question 6 show, as stated above, that the questions in English of last January, March and June were quite as satisfactory as the syllabus in English.

5 Returns to questions 8, 9 and 10, are remarkable. These answers are the only ones in which a majority of the comparatively small number of schools reporting express dissatisfaction with the English standards. It would seem incredible that on the same sheet a principal should report the question papers satisfactory and then go on to report them as ambiguous in wording, as not suited to the age and ability of the average pupil, and as tending to discourage pupils. In spite of these evident contradictions the criticisms have received careful consideration.

6 Answers to question 11 show that a majority of the teachers are satisfied with the English examinations. These answers agree with those to the sixth question.

7 More than two thirds of the principals reporting agree in thinking that the papers are fairly reviewed at the regents office and that students receive just credit for work in composition. The opinion of the minority, however, should be regarded and examiners have been directed to

In many schools students are admitted to higher English courses regardless of preparation. Thus in one school, of 140 students in the class in advanced English, 79 had not passed in elementary English. In another, seniors and first year students are together in first year English.

Illustrations of this sort could be multiplied almost indefinitely.

Some of the principals state that they would like to have an opportunity to make similar criticisms in other lines of work. This opportunity is given after each examination and a frank expression of opinion is always desired.

Value of new English courses. At the last meeting of the Associated academic principals the following resolution was adopted:

Resolved, That the regents be requested to communicate with the schools that have introduced the subjects of first year, second year and third year English, to ascertain what their experience has been as to the value of those subjects as compared with the studies of advanced English, English composition, rhetoric and English literature.

In reply to the circular of March 4, 1898 the following information was received from 25 schools in which these new courses were in operation:

1 The schools were practically unanimous in reporting the superior value of the content of each of these courses as compared with that in advanced English, English composition, rhetoric and English literature.

2 These schools were also practically unanimous in the statement that the interest of the students could be more easily aroused and made effective for instruction and discipline in the courses in first, second and third year English.

3 They were also practically unanimous in preferring for instruction and discipline a course in a few texts for careful study rather than a course like that in English literature.

4 About half the schools reporting seemed to feel that the efficiency of instruction in these courses in their present experimental stage did not compare favorably with that in advanced English, English composition, rhetoric and English literature.

Hudson river schoolmasters club. October 30, 1897 this association

Voted, That in high school mathematics, we recommend greater attention to the training of memory and imagination, more care in the gradation of the reasoning process to powers of students, more watchfulness against the abuse of the blackboards; and that we ask the regents office to send letters of suggestion after reading the answer papers as often as it shall be found expedient.

Grading of schools. The following specific rules will in future be observed in grading:

1 *High school or academy.* Each high school or academy must devote the equivalent of the full time of at least two teachers to an approved four-year academic course.

2 *Senior school.* Each school of senior grade must devote daily at least nine 30-minute periods, given by not less than two teachers, to an approved three-year academic course.

3 *Middle school.* Each school of middle grade must devote daily not less than six 30-minute periods to an approved two-year academic course

4 *Junior school.* Each school of junior grade must devote daily not less than three 30-minute periods to an approved one-year academic course.

The following circular has been sent to each secondary school:

To the secondary schools of the University

We send to every school the official certificate of the grade in which it is registered by the University. You will find the rules for grading in ordinance 14, p. 469, of bulletin 38.

To be graded as an academy or high school, there must be for academic use books worth $500 and whatever apparatus is required to teach satisfactorily the subjects in the courses given, the minimum being $250. If the most essential reference books are kept in the school building, a public library freely accessible to the students may be accepted as supplying half the library requirement. The other half must be owned by the school and kept in its own rooms. There must also be not less than two teachers giving full time to academic work. If there are three or more teachers, a full equivalent may be accepted; i. e. four teachers averaging half time on academic work, might be accepted instead of two giving whole time.

It is strongly advised that every school which can meet the conditions for that grade shall use the name high school or academy, as the public is becoming accustomed to the exact use of the grade names in accordance with the new ordinances. Academic departments of union schools which have not reached high school grade may call themselves junior, middle or senior schools according to their certificate, or retain the name 'academic department of the union school,' but they are not entitled to use the name high school till they receive the certificate of being so graded.

Similarly, a school not supported by taxation may use the term junior, middle or senior academic school, or may call itself an 'academic school.' The term academy ought properly to be used only by a school which has received a grade certificate showing that it is registered by the regents as an academy.

The ordinances however do not require that the present name be changed, but it is desirable that the grade name be used in school announcements and other printed matter as it is used by the University. In legal documents, however, the exact legal title of the corporation must be used. In granting new charters, unless there are strong reasons to the contrary, the school is given the name of its location followed by 'high school' or 'academy' according as it is supported by taxation or by private endowments and tuition. In some cases a historic name is so valued by old students that it is desirable to retain it after the academy has been changed into a high school; but it is a source of constant confusion to have names like Lincoln academy at Jonesville for an institution that is in fact the Jonesville high school.

Public sentiment is rapidly coming to recognize the high school as the most honorable and most desirable title and to take a pride in having included the name of the place, and there is little doubt that within the next few years many of the schools which now retain the old name academy will ask to have it changed to high school. The regents uniformly grant the requests of boards of trustees for a change in name that brings the school more into harmony with what has been accepted as the best nomenclature. Blanks on which to request such changes can be had on application.

MELVIL DEWEY
Secretary of the University

Grants. Heretofore half the market value of any approved piece of apparatus has been allowed from the academic fund. After October 4, 1898, in accordance with the note under ordinance 36, that 'in approving books and apparatus to be bought with grants from the University, unnecessarily costly books, editions or pieces will be counted only at the cost of a satisfactory article meeting all real needs,' the allowance from the academic fund for any chart or piece of apparatus is not in any case to exceed what the inspectors consider half its real educational value to the school.

For the following specified articles only the definite amounts here stated will be allowed: relief maps, formerly approved at $100, $30; Blodgett's historical chart, formerly approved at $22.50, $7.50; Kennedy's dissecting geometric blocks, formerly approved at $22, $5. Any chart intended partly for preacademic and partly for academic work will be rejected for duplication from the academic fund.

Fixed requirements. Reports for 1898 indicate that some schools have not complied with the ordinance requiring at least two and one half 40-minute periods, or the equivalent, of English instruction for each class each week throughout the academic course; that a few schools have not received grants through failure to remain in session 175 days, including legal holidays; that other schools failed to meet the requirement of 1000 days attendance of academic students, and that a number of schools were not provided with the specific articles required by ordinance 14 (*Regents bulletin* 38, p. 469).

This year strict compliance will be required for retention on the list of schools in good standing and entitled to receive academic grants.

of all to those schools that include either more than 20% in the 'doubtful' package or 'doubtful' papers in the 'sure' package as a result of the January examination.

Plane and spheric trigonometry. Hereafter examinations in plane and spheric trigonometry will include problems that require the use of logarithms of numbers and trigonometric functions. Tables will be sent with the question papers to be returned with the answers.

Meeting of associated academic principals. The following request for the payment of necessary expenses while attending the Syracuse meeting was sent to the local authorities in November 1898. Replies indicated a growing appreciation of the wisdom of granting this request, to which another year there will doubtless be very few denials.

To the President of the Board of Education

I beg to call your attention officially to the importance of sending the principal of your school to the annual conference of academic principals of the state held during holiday week each year at Syracuse. Study of this matter for a series of years has convinced us that no money expended by the school is likely to bring greater returns than the necessary expense of sending at least the principal of each school in the University, for there is no other educational meeting in the United States so directly helpful to principals of secondary schools. Besides the information and assistance that come from two or three days of constant conference with the best teachers in the state, the schools would gain in benefit more than the expense, if not an item of information were carried back, for the inspiration that comes from this meeting stimulates to stronger, better work and cultivates an *esprit de corps* and a pride in the profession and the school that react on assistant teachers, on pupils and on the community.

Doubtless every board of education would concur in this view if its members had our opportunities of observing the effects. I send this circular letter to the president of every board urging: 1) that the principal be present; 2) that his necessary expenses be paid by the school. The meeting is for the benefit not of the individual delegates but of the academies and high schools represented. Our principals are paid small salaries, though there is no profession in which there is harder and more conscientious work. While this meeting is a change, and so a refreshment and an advantage to your principal, it is filled with hard work, for he is trying by conferences with teachers who have similar problems in other places to find out how to accomplish more for your home community with the money, teachers and facilities at your disposal. If he is willing to give up part of his vacation in earnest work for the benefit of your school, it is not reasonable to ask him in addition to pay from his own pocket the necessary traveling expenses. It would be a pleasure to us to know and record the fact that your board had determined that hereafter it would consider the expenses of the principal in attending this meeting at Syracuse a part of the annual school expenses.

MELVIL DEWEY

Secretary of the University

Senior examiner Joseph W. Ellis. The death of Mr Ellis, September 4, 1898 was a sad blow to the members of the staff by whom he was greatly loved. The *Utica daily press* of September 5 spoke as follows of his life and character:

> His personal life and character were as near to the perfection of Christian manliness as humanity ever attains. He was a lovable, kindly, helpful man and all who knew him accorded him unstinted devotion and esteem. After 20 years he came back to the reunions of the old Whitestown students, the center of attraction, the personage most popular and beloved. Prof. Ellis never accumulated fortune nor achieved greatness in the worldly sense, but it has fallen to few to exercise a more widespread and benign influence. Coming in close contact with thousands of young people in the formative period of their lives, by precept and example he helped to make them better. It would be difficult to imagine a more unselfish character or a more useful life than his. Faithful to every duty, thinking nothing too small to be done in the very best way, diligent to a degree, he was the ideal instructor. There are very many who, regretting to read of his death, will feel they owe him a never to be paid debt of gratitude. Reckoned in coin, his reward was not large, but calculated in love, respect and esteem, in consciousness of every duty nobly discharged and in the cheerfully recognized obligation of those he instructed, his reward can not be over estimated. Such lives are as rare as they are beautiful.

Teachers institutes and associations. At the request of the department of public instruction I have assisted during the year at the following teachers institutes:

Date	Place	Periods
Sep. 16–17	Fort Edward	6
Oct. 8	Batavia	3
" 13	Southampton	4
" 28	Sandy Hill	4
Nov. 17–18	Plattsburg	3
Dec. 20–21	Saratoga	4
" 22	Fort Plain	2
" 23–24	Webster	4
Jan. 4–5	Clarence	6
Feb. 2–3	Addison	3
" 18	Poughkeepsie	4
Mar. 4	Binghamton	3
Ap. 5–6	Geneva	6
" 7	Canandaigua	2
" 14	Kingston	3
" 22	Marathon	3
" 26–27	Goshen	4
May 4	Fishkill	3
" 18	Lake George	3
	Total 19 places and	70 periods

As in former years, one period in each of these institutes has been devoted to a conference with academic teachers and to the discussion of

Up to Jan. 1 appointments have been made as follows for the academic year 1899:

Charles F. Wheelock

Teachers institutes			
Dutchess co	week of	Oct.	10
Ulster co	“	“	17
Washington co	“	“	31
Ontario co	“	Nov.	7
Cattaraugus co	“	“	14
Broome co	“	Dec.	5
Wayne co	“	“	12
Otsego co	“	“	19
Saratoga co	“	“	19
Chenango co	“	“	19
Montgomery co	“	Jan.	2
Cayuga co	“	“	30
Steuben co	“	“	30
Livingston co	“	“	30
Niagara Falls	“	Feb.	6
Erie co	“	“	6
“	“	“	6
Rome	“	Mar.	2
Oswego	“	“	3
Tioga co	“	Ap.	3
Fulton co	“	“	3

Teachers associations		
Saratoga co. ass'n	Feb.	11
Herkimer co. ass'n	“	18

Charles N. Cobb

Teachers institutes			
Genesee co	week of	Oct.	17
Saratoga co	“	Dec.	5

Teachers associations			
Montgomery co. ass'n	week of	Nov.	7

Charles Davidson

Teachers institutes			
Chautauqua co	week of	Sep.	26
Rensselaer co	“	Oct.	3
Cattaraugus co	“	Nov.	14
Wyoming co	“	“	28
Saratoga co	“	Dec.	19
Montgomery co	“	Jan.	2
Ogdensburg city institute	“	Feb.	27
Rome city institute	“	“	27

Teachers associations		
N. Y. Commercial teachers ass'n	Oct.	8
Ulster co. association	“	1
Steuben co. “	Dec.	3
Jefferson co. “	“	9
Owego principals conference	Jan.	14
Rockland co. association	Feb.	11
Gloversville city and county association	“	13

Eugene W. Lyttle

Teachers associations			
Chautauqua co	week of	Feb.	6

for any one class in the time allotted to study exhaustively all the topics mentioned, and no one textbook would furnish the material for such exhaustive study. It is here that the alternative questions come in to give relief. A question paper is set containing 15 questions from which the candidate may select the 10 which he chooses to answer, except in the case of geometry where only eight of the 15 are required. This gives the student a chance to show what he knows, which is quite a different thing from an attempt to find out what he does not know. If a question paper has been properly prepared and a class has been properly instructed, each candidate should find on the paper at least four questions that relate to matters which have not been taken up in detail in his study of the subject. If this is not the case it is evidence either that the questions have not been properly distributed over the whole field, or that the instruction and study have been distributed over too much of the field. If teachers and students will take this attitude toward the examination system, all of its limiting and hampering effects will disappear and it will be, as it is intended to be, stimulating in the best sense. The teacher who expects to train a class of students in 20 or even in 40 weeks to answer any legitimate question in any branch of science or history or literature, or who leads his students to expect to do it, must certainly have a very narrow view both of the subject-matter studied and of the mind of the student.

Equipment. Among the facts noted by the inspectors as worthy of special mention is the disposition on the part of boards of education and principals to comply promptly and cheerfully with all requirements of the University. Nearly all the schools are now provided with the articles specified in the University ordinances.

Grading. During the year the grade of 48 schools has been raised because of increased equipment, additions to teaching force and better work. An immense benefit has resulted from the employment of additional teachers in order that schools meeting all requirements might thereby be raised in grade. The only possible danger from this source is that small schools may be ambitious to reach a higher grade than they can readily maintain, and so attempt more work than they can do well. Careful inspection is the safeguard against this danger.

The following table shows the changes that have taken place in the grades of the schools since 1896:

Grading of schools

	ACADEMIES							UNION SCHOOLS							TOTAL						
	Acad.	Sr acad.	Mid. acad.	Jr acad.	Below grade	[c] Special	Total	H. S.	Sr	Mid.	Jr	Below grade	[h] Special	Total	H. S.	Sr	Mid.	Jr	Below grade	Special	Total
January 1, 1896..........	86	7	6	18	7	..	124	125	19	36	106	9	2	297	211	26	42	124	16	2	421
October 21, 1896..........	87	1	6	24	1	..	119	214	34	43	137	..	2	430	301	35	49	161	1	2	549
June 30, 1897............	90	2	6	20	1	..	119	247	26	50	140	..	2	465	337	28	56	160	1	2	581
December 22, 1897......	92	2	7	21	1	..	123	253	24	51	158	..	2	488	345	26	58	179	1	2	611
June 30, 1898............	99	3	8	19	1	1	131	267	24	61	160	..	2	514	366	27	69	179	1	3	645
December 16, 1898......	[a]98	4	9	[b]18	1	1	131	[d]279	[e]28	[f]67	[g]146	..	2	522	377	32	76	164	1	3	653

[a] Of these 10 are deficient in equipment.
[b] Of these seven are deficient in equipment.
[c] Round Lake summer institute.
[d] Of these 25 are deficient in equipment.
[e] Of these three are deficient in equipment.
[f] Of these 17 are deficient in equipment.
[g] Of these 21 are deficient in equipment.
[h] Schools for the blind.

In conclusion I wish to acknowledge again the courtesy with which the inspectors have been received throughout the state. For this treatment we are very grateful.

Apparatus inspector James H. Gibson submits the following special report for the academic year 1898 :

Selection of apparatus. After 18 years' experience in nearly all school laboratories in the state, I am convinced that many thousands of dollars have been tied up in unnecessarily expensive apparatus. There has been a very decided improvement in the selection of apparatus in the last four or five years, largely the result of the work of the inspection division. Still there are some school officers, and not a few teachers, who seem to think it advisable to buy a few large and expensive pieces rather than many smaller and plainly finished ones.

The following illustrates my meaning: the pieces named with cost I have seen in many school laboratories—air pump, $100; hydraulic press, $40; upward pressure weight lifter, $10; Pascal's vases, $10; Magdeburg cups, $6; transmission of force, $8; hydrostatic bellows, $20; total $194. Everything shown by any one or all of these pieces may be illustrated as well by a careful teacher, with one air pump costing $20, and one seven-in-one apparatus costing $6.50, total $26.50, leaving $167.50 for other apparatus. Such economy might not be advisable for cities and large towns that can afford large and well-equipped laboratories, but the average union school must necessarily use great care in expending available funds to get that which will be of the greatest educational value.

Unprofitable machines. There are a few pieces of apparatus illustrated in dealers' catalogues and in textbooks that seem specially desirable but have proved to be of little educational value in the classroom—Atwood's machine is an example. I can now recall but two reported as entirely satisfactory. Both were in city schools with large working laboratories under special teachers. About 6% of these machines would verify the laws of falling bodies if we knew how much to allow for friction, etc. At least 75% are of no practical value. While it may be desirable to buy many kinds of low cost pieces, cheap Atwood's machines have not proved satisfactory.

Another example is the mechanical powers apparatus, consisting of a frame supporting a system of pulleys, levers, wheel and axle, capstan, and model of the screw. The average cost of the apparatus is about $25. Not over 5% are in perfect order after the first year and in a few years 50% are practically useless. The system of levers on this frame is of brass and adds considerably to the cost. I have never seen these

Another principal asked me to give him an estimate of the cost of an oil lantern and views suitable for classroom work. The same day when overhauling the apparatus I found packed away a lantern and about 100 views. The lamp was put in order and the lantern cleaned. The screen was found in the library. In the evening the outfit was set up in one of the schoolrooms and the principal, who had no experience in this work, soon learned how to use it to get the best results and it proved to be just what he wanted. It is not improbable that this teacher will make good use of the lantern and at the close of his term of service pack it away for safekeeping and his successor never take the trouble to open the box to learn its contents. Many such experiences could be given.

Needless depreciation. After a careful estimate, based on an experience of nearly 20 years, it is safe to say that the loss in educational values on apparatus in this state during that time has been not less than $30000. Some of this loss is due to the great change required in electric instruments, but the chief causes are careless and ignorant use by pupils and teachers and neglect properly to clean and care for after use. There has been a marked decrease in the rate of loss during the last five or six years, one of the good results of official inspection, and the improvement is not confined to the laboratories, but extends to everything pertaining to the school. It is a pleasure to report that the number of able teachers who use and properly care for their apparatus is increasing.

A single case will illustrate what can be done by an energetic and skilful teacher. Two years ago I visited a village where an old academy had been changed to a union school. Some changes had been made in the building, but no provision had been made for the care of apparatus. This was found on the floor of a small room, disjointed, broken, rusty and mixed with dirt, waste paper, broken lamp chimneys and other rubbish. After visiting the school board and urging on them the necessity of providing cases for apparatus, I left without making repairs, promising to return when the cases were ready. Last summer I again visited the school prepared for the work of changing a junk heap into useful apparatus. I found in the academic room new cases with glass doors and good locks and in these cases the bright brass and clean wood of what at first sight appeared to be new apparatus, but proved to be the transformed junk heap. The principal had interested a young man residing in the village and a recent graduate of a technical school in the work of restoring the apparatus. Working Saturdays, holidays and vacations they had at little cost converted this junk heap into a good apparatus equipment.

Do not let nitric acid, muriatic acid or chlorid of lime remain in the vicinity of physical apparatus not even if they are in well-stopped bottles. The injury done in the last 30 years by these three articles alone amounts to thousands of dollars.

Do not let any apparatus be used to prop doors or to hold up windows or as stage properties in entertainments. I have found in piles of waste after some school entertainments valuable pieces of apparatus with gilt battle axes, broken crowns, hemlock brush, etc.

Do not let the village doctor keep the school microscope in his office.

Do not let your friend take the electric machine home to use for his rheumatism.

Do not let boys take apparatus apart to see the 'inside' unless under the eye and direction of a teacher. A spectroscope was recently found in a condition indicating that some one had taken it to pieces and was not able to put it together again. The telescope was found in a closet under the work table, part of the standard in a case and the tube with the prisms in another case. Part of the mounting and all the connecting screws were missing. The instrument originally cost $50 or $60. Many cases could be mentioned where other apparatus has been found under similar conditions.

Do not let students make haphazard experiments, specially with chemicals. They are of little educational value and are dangerous. I know one boy who lacks an eye, another two fingers, another whose hands and face were badly cut with broken glass, besides countless smaller accidents, all the result of careless experiments. A room badly scorched and property destroyed, and an entire building burned are other results.

Do not let the janitor and scrub women 'wash and clean up' the apparatus.

Taken as a whole the condition of laboratories and apparatus is steadily improving. There are many laboratories in excellent working order under the care of efficient teachers and the number is increasing. The educational value of apparatus as now used is greater than ever before. Still it is quite evident that too many teachers do not have enough instruction in the manipulation of apparatus before taking charge of a laboratory.

Information relating to equipment for secondary schools, compiled by Frederic M. Baker, the apparatus clerk, is printed in the appendix as exhibit P.

CONDENSED REPORT OF COMMITTEE ON SYLLABUS REVISION TO ACADEMIC PRINCIPALS AT SYRACUSE DECEMBER 1898

The committee on syllabus revision, appointed in December 1895, finds itself in the double relation of statistician and advisor. It may collect and edit the opinions of the principals, but it remains for the high school department to approve or reject its suggestions and conclusions. The correspondence with the principals has been heavy, each principal having been addressed at least twice. To the following general letters 112 replies have been received.

Ithaca, N. Y., 18 *Nov.* 1898

THE 1900 SYLLABUS

Last March a letter was sent to every principal in the state urging him to discuss needed changes of the syllabus with his faculty, to go through the entire work, and to report to the committee such changes as seemed desirable. From 600 principals addressed, only 68 replies were received. Is the committee to infer that the 532 who did not reply are entirely satisfied with the regents syllabus as it now stands?

The subject of syllabus revision is to be discussed at the Syracuse meeting, December 27–29, when the work of the committee representing the academic principals will be practically completed. The regents will take the suggestions which have been gathered, and in the light of them proceed to revise the syllabus. What points should be brought out in the final report of the committee?

If the present syllabus is not entirely satisfactory, now is the time to make it known. Every principal should examine the entire syllabus, note the changes he desires to have made, and send these to the revision committee. If there is not time to go over the entire syllabus, please take that part which seems to have particular deficiencies and report upon that.

Very truly yours

F. D. Boynton
E. W. Lyttle
F. V. Lester
Committee

Ithaca, N. Y. 3 *March*, 1898

Fellow principal: Pursuant to a resolution passed at the Syracuse meeting, 1895, your committee on regents syllabus has begun its work to ascertain the changes desired by the principals, to tabulate and distribute the results and arrange for the consideration of proposed changes at our next meeting.

The syllabus will be published in 1900 and must then remain unchanged for five years. Now is the time to make suggestions for a change in the program of examinations, correlation of subjects — such as American history and literature, English history and literature, Cicero and Roman history, Nepos and Greek history, etc.; whether U. S. history should be divided and part 1 become one of the preliminaries, how this division should be made, if at all; whether drawing should become a preliminary subject; whether Greek should be dropped, etc.

We have asked the regents to communicate with the schools that have introduced the subjects of 1st, 2d and 3d year English to ascertain what their experience has been as to the value of those subjects as compared with advanced English, English composition, rhetoric and English literature; and to issue a bulletin giving the results of this inquiry.

It is the hope of the committee that every principal will discuss the various changes desired with his faculty and respond promptly, specifying as clearly as possible the changes which he thinks would improve the work in the regents schools. The above suggested changes are not intended for anything but suggestions, and it is hoped that the responses from the principals will cover the entire field.

Very truly yours

F. D. BOYNTON
E. W. LYTTLE } *Syllabus committee*
F. V. LESTER

The 112 replies may be roughly tabulated as follows:

8 wish changes made in the program of examinations.

12 prefer stability to changes of any kind.

10 wish two examinations given in spelling, preacademic and academic.

4 wish a one count test in vocal music.

8 wish the questions in physics and chemistry such as to bring out the amount of laboratory work done.

12 from colleges, seminaries and new principals who are unable or unwilling to suggest changes.

6 are for and 7 against correlating U. S. history and literature.

7 are for and 6 against correlating English history and literature.

7 are for and 8 against correlating Nepos and Greek history.

16 are for and 19 against dividing U. S. history and adding part one to the preliminaries.

15 are for and 22 against adding drawing to the preliminaries.

22 are for and 27 against increasing the preliminaries.

4 are for and 14 against dropping Greek from the program.

On doubling the time and counts for Greek and Roman history, and for lessening the amount of work required in English and American literature, the replies are practically unanimous in favor of such change.

In addition to the above the following suggestions have also been made: give a written examination in spelling for each certificate issued; divide all 40-week subjects into parts 1 and 2 and give an examination at the end of each part; divide U. S. history and cut out or correlate civics with it; reduce the number of counts required for a classical fractions, decimals, denominate numbers, the metric system and percentage. Percentage, as used in this report, is intended to include interest, commercial and bank discount, and to exclude the remainder of commercial arithmetic. It is believed that the time now spent on that portion of arithmetic, which the adoption of this recommendation would exclude, may be more profitably spent on mental arithmetic, concrete geometry, and simple algebraic forms. Time is thus saved for the pupil who is to continue his studies while the pupil who ends his school life with the grammar school or before has all the arithmetic that the average man in any business ever has occasion to use. By the introduction of the simpler forms of algebra and of concrete geometry into preacademic study an added stimulus that will lead to high school work is given to the pupil.

The great fault of our educational system is the failure to correlate similar subjects or different parts of the same subject. We are going over and over the same ground at different points of the course. In the judgment of the committee, the intensive study of political and physical geography may be left profitably to a later period, the political geography to be taught with history, and the physical geography with science. It is therefore recommended that less be required of preacademic pupils both in political and physical geography

The American public school has before it a definite purpose, namely, the preparation of its boys and girls for intelligent American citizenship. Citizenship is the supreme test, the ultimate end of public education, and alone justifies the outlay of public funds. Hence there is no subject of more importance, no subject more closely related to good citizenship than U. S. history. As most of our pupils complete their school life before they reach the high school, it is necessary to teach this subject with the elements of civil government, in the grades. It is therefore recommended that U. S. history form a large part of the work in reading in the seventh and eighth years, and that an examination be given at the close of the eighth year. This examination should cover the entire field of U. S. history, but in a less intensive form than is expected of present U. S. history classes. The committee does not recommend that the study of U. S. history end at this point, but that a full year's course in U. S. history and civics be placed in the high school, not earlier than the third year, and after the student has had one or more years of other historical study.

This committee believes that the above recommendations may be carried out easily in the grades, and if so that much of the gap which now exists between the grammar and the high school will be closed and a much larger number of pupils will enter the high school.

If it is possible to blend the last year of the grammar school with the first year of the high school, or to take one or two high school subjects during the last year of the grammar school, then much will have been accomplished toward closing the break between the two schools.

Many high school students choose a course with two foreign languages. The reason for this is evident. The classical courses, those that have Latin with some other foreign language are still regarded as leading straight to the college; the general courses are regarded as leading nowhere. The obstacles now thrown in the way of completing any of these courses should be removed. At present 54 counts are required of the classical student who elects Latin and Greek as follows: Latin, 15; Greek, 11; English, 8; history, 6; science, 6; mathematics, theoretically 6, but practically 8; a total of 54 of which 34 are language counts or nearly three full years of the course. If a modern language is selected in place of Greek, 51 counts are required.

The reason why this discrimination should be made is not quite clear. But any attempt to lengthen the period of secondary study should be opposed by every principal. Any good four-year course of study, should be accepted by the colleges. If they are unwilling to do this, then so much the worse for them. If it is true that continued study of foreign languages does not at the same time teach correct English expression, then there should be a corresponding reduction in the time allowed and in the amount of work required for the study of foreign languages. It should be made possible for the average student to complete any well-balanced 48 count course in four years, with 15 hours of prepared recitations a week.

The correlation of Nepos and Greek history, of Cicero and Roman history would through concentration save some time in schools that take these subjects.

Nothing tends more to superficiality than a series of 10-week subjects. The reduction of the number of such subjects accomplishes a double purpose, 1) it secures better work, 2) it holds the pupil in school for a longer period. One of the reasons why the classical course has been regarded so universally a better course than any that has thus far been offered as a substitute is the thorough study of comparatively few subjects. The committee, therefore, recommends that all 10-week courses be abolished.

It is further recommended that two counts be given to Greek and Roman history, and that New York history, if continued at all, be continued as a reading course with advanced U. S. history, and given one count. For nonclassical students it is recommended that one or more of the great masterpieces of classical literature be read in translation in both the Greek and the Roman history classes.

The feeling is general among the principals that the amount of work required in both English and American literature is altogether out of proportion to time allowed and counts given. It is therefore recommended that the amount of work in both English and American literature be reduced one half, and that definite authors be assigned for each year's study, that it be understood that the study of English and American literature with advanced English be assigned to the third year of the English course, that the course in English reading be assigned to the fourth year of the English course and be given four counts.

The time has not yet arrived when the March examination should be discontinued. If the state undertakes to conduct these examinations at all, then it should make ample provision for them, including the review of papers. The committee assigns two reasons for this position:

1 The strain on students in the graduating classes, who do not know whether they are to be graduated or not till within a few hours of commencement exercises, is a serious matter and should be avoided. It should therefore be the aim of all principals to arrange the work of the senior class so that after the March examination each member may spend the remaining portion of the year in the intensive study of some period of history or literature or biography with the object of writing a thesis of from two to three thousand words.

2 Many schools in smaller towns and villages still find it impracticable to adjust themselves to a two-term course, there being a large number of nonresident boys and girls from the country who find it necessary to leave school in the early spring. It is therefore recommended that the March examination be retained for preacademic, 11th and 12th year pupils, and that the January and June examinations include all subjects; that the program of examinations be modified by placing 11th and 12th year subjects in the first three days and the preacademic subjects in the last two days of the week.

After some inquiry into the causes, the committee has been unable to see the full force of the argument, that a subject which is studied for 10 weeks should be given just as searching an examination, extending over the same length of time as a subject pursued the entire year. It therefore recommends that for all subjects receiving but one count and studied but 10 weeks, should any such escape the final revision of the 1900 syllabus, but two hours be given in which to write the examination with a corresponding decrease in the number of questions submitted.

There is a general impression that too many subjects are now included in the schedule of examinations, and that this number should be reduced. It is therefore recommended that all subjects be omitted in which less than 10 schools, as shown by the examination returns, are interested.

Finally, the committee recommends that the work of syllabus revision be along lines looking toward four-year-parallel courses in history, science, mathematics and English. It is recommended that the course in history include the study of general history, Greek, Roman and English history with a year of advanced U. S. history and civics; the course in science, a year each in physics, chemistry, biology and geology; the course in mathematics, elementary algebra, plane and solid geometry, plane and spheric trigonometry and advanced arithmetic; the course in English, 1st and 2d year English as prescribed in the present syllabus with such minor changes as may seem necessary, advanced English and the history of English and American literature for the third year, English reading for the fourth year.

Respectfully submitted

F. D. BOYNTON }
E. W. LYTTLE } *Syllabus committee*
F. V. LESTER }

Report of committee of Associated academic principals on revision of courses of study

November 15, 1898, the following letter was sent to all high schools and academies of the University:

Ithaca, N. Y., 15 *Nov.* 1898

FELLOW PRINCIPAL:

The chancellor of the University has appointed the undersigned to take charge of the work specified in the following resolution passed at the Convocation in Albany last June: 'The chancellor shall appoint a committee from the academic principals of the state whose duty it shall be to take under advisement the arrangement of parallel courses of study —academic, commercial, manual training, domestic, also in history and science—to be printed in the 1900 syllabus as suggestions to the schools of the state.

The committee respectfully asks you to give on one side of the inclosed blank complete information of your courses as they now exist; and on the other side what in your judgment would be an ideal course or courses for a school of your grade. If you do not favor 'labeled courses,' kindly fill out on the back of the blank a general course suited to all pupils and all conditions. The committee asks an immediate reply in the inclosed envelop in order that it may be able to make a preliminary report at the principals' conference, which will be held at Syracuse during the holiday vacation, December 27–29.

Very truly yours
F. D. Boynton, Ithaca
F. V. Lester, Westport
O. D. Robinson, Albany
C. T. R. Smith, Lansingburg
James Winne, Poughkeepsie
C. W. Evans, Elmira
A. L. Goodrich, Utica
Committee

The blank called for courses of study in effect in 1899 and for ideal courses that might be suggested for the 1900 academic syllabus.

Replies from 108 schools were received in November and December. The high school department was unable to tabulate these returns in time for consideration at the principals' conference. The committee asked, therefore, that they be printed by the University and that a final report be presented at convocation in 1899.

Of the 108 replies to the circular letter, two gave an actual general course and nine an ideal; 71 an actual classical course and 14 an ideal; 81 an actual Latin-academic course and 13 an ideal; 31 an actual modern language course and eight an ideal; 57 an actual English course and six an ideal.

Of 86 schools 79% reported rhetorical exercises. The average preparation for these exercises in 30 schools was 123 minutes. The average weekly time aside from preparation in 52 schools was 34 minutes.

Of 88 schools 85% reported general exercises in singing. In 69 schools the average daily time devoted to these exercises was 12¼ minutes.

89 schools reported 482 academic teachers, an average of five to each school. 84 schools reported 7741 pupils holding preliminary certificates. 86 schools reported 19764 pupils, an average of 229 pupils. In 75 schools the average number in the graduating class was 13. In 73 schools the average age at graduation was 17.74 years.

The 64 schools giving an actual classical course introduce 67 different subjects; the 14 schools suggesting an ideal classical course 57; the 69 schools giving an actual Latin-scientific course 68; the 11 schools suggesting an ideal Latin-scientific course 51; the 80 schools giving a real English course 67; the six schools suggesting an ideal English course 38. Tables G–I in the appendix give these returns in detail.

ADMISSION REQUIREMENTS TO REPRESENTATIVE COLLEGES OR COLLEGE DEPARTMENTS OF UNIVERSITIES IN THE UNITED STATES AND CANADA [a]

These requirements, measured by the University unit (count), representing 10 weeks' work for five days each week are presented for comparison with the report of the committee of the academic principals.

Tables J, K, L, M in the appendix give the classical, Latin-scientific, scientific and English courses, or their equivalents. The numbers refer to the columns in the table and are followed by the state or province, institution, place, course, year in force and grading as measured by counts required.

The 25 colleges offering a classical course introduce 40 different subjects; the 25 colleges offering a Latin-scientific course 42; the 25 colleges offering a scientific course 45; the 12 colleges offering an English course 41.

Admission to 25 colleges or college departments of universities

Classical course

No.	State or province	Institution	Place	Course	In force	Counts
1	California	University	Berkeley	Group 1	1901	58
2	Colorado	University	Boulder	Classical	1898	52
3	Connecticut	Yale	New Haven	Classical	1899	52
4	Illinois	University	Urbana	Classical	1898	45
5	Indiana	University	Bloomington	Classical	1898	56
6	Iowa	University	Iowa City	Classical	1898	46
7	Kansas	University	Lawrence	Group 2	1898	42
8	Maryland	Johns Hopkins	Baltimore	Classical	1898	51
9	Maine	University	Orono	Classical	1898	51
10	Massachusetts	Harvard	Cambridge	Group a	1898	60
11	Michigan	University	Ann Arbor	Group 1	1898	50
12	Minnesota	University	Minneapolis	Classical	1899	54
13	Nebraska	University	Lincoln	Classical	1898	46
14	New Hampshire	Dartmouth	Hanover	Classical	1898	48
15	New Jersey	Princeton	Princeton	Classical	1898	49
16	New York	Columbia	New York	Group 1 or 2	1899	48
17	New York	Cornell	Ithaca	Group A	1899	50
18	North Dakota	University	Grand Forks	Classical	1898	36
19	Ohio	University	Columbus	Classical	1897	51
20	Pennsylvania	University	Philadelphia	Group 2	1898	50
21	Rhode Island	Brown	Providence	Group 2	1898	50
22	South Dakota	University	Vermillion	Classical	1898	48
23	Wisconsin	University	Madison	Group 2	1898	50
24	Ontario	Toronto	Toronto	Part 2	1898	38
25	Quebec	McGill	Montreal	Arts associate	1899	24

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[a] Compiled by Directors' assistant Henry L. Taylor, Ph. D.

Scientific course

No.	State or province	Institution	Place	Course	In force	Counts
1	California	University	Berkeley	C. E.	1901	43
2	Colorado	School of mines	Golden	General	1898	12
3	Connecticut	Yale	New Haven	Sheffield sci.	1898	43
4	Illinois	University	Urbana	Coll. of sci.	1898	34
5	Indiana	Rose polytechnic	Terre Haute	C. E.	1898	12
6	Iowa	University	Iowa City	Philosophy B	1898	39
7	Kansas	University	Lawrence	Engineering	1900	46
8	Maine	University	Orono	Scientific	1898	30
9	Maryland	Johns Hopkins	Baltimore	Group 2	1898	50
10	Massachusetts	Inst. of technology	Boston	C. E.	1900	28
11	Massachusetts	Worcester poly.	Worcester	General	1899	24
12	Massachusetts	Harvard	Cambridge	Lawrence sci.	1898	30
13	Michigan	University	Ann Arbor	Group 4	1898	50
14	Minnesota	University	Minneapolis	Scientific	1900	54
15	New Hampshire	Dartmouth	Hanover	Thayer scho'l	1898	36
16	New Jersey	Green school of sci.	Princeton	C. E.	1898	29
17	New Jersey	Stevens	Hoboken	General	1898	28
18	New York	Columbia	New York	Sch. of mines	1898	41
19	New York	Cornell	Ithaca	Sibley coll.	1898	32
20	Ohio	Case school	Cleveland	General	1897	26
21	Pennsylvania	Lehigh university	S. Bethlehem	Sci. & letters	1898	24
22	Pennsylvania	Towne scientific	Philadelphia	Sci. and tech.	1898	32
23	Rhode Island	Brown	Providence	Group 4	1898	31
24	Wisconsin	University	Madison	Group 4	1898	50
25	Ontario	Coll. of phys & sur.	Toronto	General	1898	36

Admission to 12 colleges or college departments of universities

English course

No.	State	Institution	Place	Course	In force	Counts
1	California	University	Berkeley	Social sci.	1901	58
2	Colorado	University	Boulder	B. S.	1898	50
3	Michigan	University	Ann Arbor	Group 4	1898	50
4	Minnesota	University	Minneapolis	Literary	1900	50
5	Nebraska	University	Lincoln	General	1898	45
6	North Dakota	University	Grand Forks	English	1898	36
7	New Hampshire	Dartmouth	Hanover	Lat.sci.(B.L)	1898	50
8	New York	Cornell	Ithaca	Group C	1899	46
9	Ohio	University	Columbus	Eng. in phil.	1898	42
10	Pennsylvania	University	Philadelphia	Course 4	1898	30
11	South Dakota	University	Vermillion	Literary	1899	44
12	Wisconsin	University	Madison	Eng. group 6	1898	46

New definition of requirements

1 **English as at present.** (Outlined in *cat.*; virtually college entrance requirements in English as adopted by the Association of colleges and preparatory schools of the middle states and Maryland; 8 counts)

2 **Elementary Greek.** The examination will be adapted to the proficiency of those who have studied Greek in a systematic course of five exercises a week extending through at least two school years. (*Cat.*; involves changes; 8 counts)

3 **Greek authors,** and

4 **Greek composition.** To be adequately prepared for both examinations, the candidate should have studied Greek in a systematic course of five exercises a week extending through at least three school years. (*Cat.*; involves changes; 12 counts)

5 **Elementary Latin.** The examination will be adapted to the proficiency of those who have studied Latin in a systematic course of five lessons a week extending through at least three school years. (*Cat.*; involves changes; 12 counts)

6 **Latin authors,** and

7 **Latin composition.** To be adequately prepared for both examinations, the candidate should have studied Latin in a systematic course of five lessons a week extending through at least four school years. (*Cat.*; involves changes; 16 counts)

8 **Elementary German.** Selections for translation into English will be suited to candidates who have read not less than 200 pages of easy German. The grammar should be studied concurrently. (*Cat.*; involves changes; 4 counts)

9 **Advanced German.** The translation at sight of ordinary German. The translation into German of a connected passage of English prose. In addition to the amount specified under elementary German not less than 500 pages of classical and contemporary prose and verse. (*Cat.*; discussions of the Commission of colleges of the New England states; course seems short of three years' work; 10–12 counts)

10 **Elementary French.** Selections for translation will be suited to the proficiency of candidates who have read not less than 400 pages. The grammar should be studied concurrently. (*Cat.*; involves changes; 4 counts)

11 **Advanced French.** Selections for translation will be suited to the proficiency of candidates who have read in addition to the elementary French not less than 600 pages of prose and verse. (*Cat.*; discussions of

25 **Botany.** A course of study in laboratory work. The course should extend through at least half the school year with five lessons a week (*Out.*; 2 counts)

Zoology. A course of study in laboratory work. The course should extend through at least half the school year with at least five lessons a week. (*Out.*; 2 counts)

27 30 **Shop work.** A course of instruction in the use of tools and in the ordinary processes employed in the working of wood and metal.

27 **Woodwork**

28 **Blacksmithing**

29 **Chipping, filing and fitting**

30 **Machine tool work.** Notebooks and models required. (*Out.*; 2-4 counts each)

31 **Freehand drawing.** The representation of simple objects in outline and shading. (2 counts).

32 **Projections.** The projection in plan and elevation of geometric figures and of simple parts of architectural subjects or machinery. (*Out.*; 31 and 32 are the equivalents of the 'Outline of requirements in drawing'; 2-4 counts each).

Terms of admission to Harvard college under the new system are not yet formulated but it is not the intention of the faculty to increase the amount of work required.

Proposed requirements for admission to the Lawrence scientific school

The following preliminary statement has received the approval of the faculty of arts and sciences. By this plan admission requirements will be brought up to substantial equality with those of Harvard college, by adding new subjects from time to time. In those studies which may be used for admission either to Harvard college or to the scientific school, the examinations will be identical. The number placed before each study designates the same study in the new definitions of requirements. The figure which follows each study indicates the relative weight which it is proposed to give to it in determining the question of the candidate's fitness for admission; but the weights, as well as other features of the plan, are subject to modification.

Languages

Elementary	*Advanced*
1 English (4)	3 Greek authors (2)
2 Greek (3) Offered without Latin will count 4	4 Greek composition (1)
	6 Latin authors (2)
5 Latin (4)	7 Latin composition (1)
8 German (2)	9 German (2)
10 French (2)	11 French (2)

For 1903, and thereafter, the studies of Group A, and in addition studies aggregating 9 points, a total of 26 points.

It is proposed, however, to limit the freedom of election by certain restrictions on the choice of optional studies.

Conclusions. The preceding summaries show

1 a great lack of uniformity in courses of study in force in New York secondary schools;
2 a similar lack of uniformity in courses of study suggested as ideal;
3 a decided lack of uniformity in admission requirements to representative colleges;
4 results of endeavors of Columbia conferences to promote uniformity in college-entrance requirements.

Careful study of these summaries and discussions should lead to working courses for one, two, three and four-year secondary schools so that a student might change with the least possible loss

1 from one secondary school to a corresponding grade in another;
2 from grade to grade in the same or another secondary school;
3 from course to course in the same or another secondary school;
4 from one college, university, professional, technical or other special school to a similar institution in the same or another state.

The problem demands

1 a clear definition of
  a) fundamental subjects common to all courses, e. g. algebra, etc.
  b) essential subjects belonging to particular courses, e. g. Latin in classical.
2 an exact assignment of
  fundamental and essential subjects to certain positions, e. g. second year English to the second year, not to the first year as suggested in four 'ideal' courses.

Principals are requested to study the problem carefully and to forward suggestions to the high school department.

SUMMARY OF SUGGESTIONS FOR 1900 ACADEMIC SYLLABUS

Preliminaries. Outlines in reading, writing, spelling and elementary English, the language studies required for admission to the high school, should be more specific. Though each subject is in close relation with all the others, elementary English should be considered the sum of results obtained in all.

Outlines in arithmetic and geography should be to some extent simplified, even beyond the abridged forms of the 1895 revision.

In teaching arithmetic special emphasis should be placed on the avoidance of puzzles and operations with enormous numbers, and on attention to mental work and to practical problems.

In teaching geography the minds of pupils should not be burdened with useless details.

English. 11 branches should be substituted for the 17 given in the 1895 edition :

4 First year English
4 Second year English
4 Third year English
4 English reading
2 Advanced English
2 English composition
2 Rhetoric
2 American selections
2 English selections
2 Advanced English composition
2 History of literature

The courses in first, second and third year English and that in English reading should form a carefully graded course extending over the four years of the high school. These courses should be so arranged that where the pressure of other subjects forbids the giving of so much time to English, the curriculum may be lightened by omitting the work of any year and distributing the work of either the preceding or following year over two years. If in any year of the high school course it is impossible to give English continuously throughout the year, parallel half-year courses should be offered, and these should be in most cases so similar to portions of the full year courses that students may pass from them to the year's course without inconvenience. The desire that more than four years of English should be available for graduate students should be met by the provision that some of the parallel courses of the later years should be elective as additional courses. By this arrangement also those who prefer extensive to intensive courses in the later years, and those who wish to teach the history of literature rather than the courses required for entrance to college, would be accommodated without confusion or loss in the gradation of work from term to term. All the courses should be planned to require the full time in study and recitation that is demanded for any other courses to which the same credits are assigned.

German and French. Prof. H. S. White, dean of the Cornell university faculty and professor of German, writes as follows touching the modern language courses in the 1895 syllabus.

> I have recently examined the academic syllabus referring to the examinations in German and French. Regarding the directions to students

and the papers set in these languages, Professor Crane (professor of the Romance languages) and myself agree that there is little to suggest. The examination papers and the instructions for preparation seem quite well adapted to the time set aside for these subjects. One suggestion, however, I desire to make with regard to the work set for translation into English for second year German. Our experience has been that in too many of the schools the translation during the second year is confined to easy stories and plays. Examining your list on page 317, I find only one work, Freytag's *Journalisten*, which is of a distinctly classical character. It seems to me that it would be well to insert in this list some of the standard works noted on page 318, as for instance, Lessing's *Minna von Barnhelm*, Goethe's *Hermann und Dorothea*, and Schiller's *Wilhelm Tell.* I see no reason why one or more of the above four works should not be read during the second year.

Our criticism of the work in the modern languages in the schools is that these languages are not taken seriously enough. The same students who are studying difficult Latin and Greek classics are set to work on the easiest French and German productions, and complain if works of even moderate difficulty are set for translation. The result is that often students study two years in the schools merely to meet our elementary requirements in French and German; and sometimes three years are spent without meeting our requirements for advanced German. The principal reason is that the standard German classics are not begun early enough in the course. Your selections for second and third year French and for third year German are all that could be desired.

In individual cases principals of New York secondary schools have criticized the modern language courses as too severe. Returns from the whole state, however, indicate a comparatively unusual degree of satisfaction. This is specially true of first and second year German, first, second and third year French.

The criticism of Prof. White and Prof. Crane that the work in modern languages in the schools is not taken seriously enough seems perfectly just. Courses in German and French should require as much and as careful work as those in Latin. In second year German Schiller's *Wilhelm Tell* and Goethe's *Hermann und Dorothea* should be substituted for Freytag's *Journalisten*, and in third year German *Faust* should be omitted.

Greek. Second and third year Greek should be omitted.

Mathematics. There should be one two-count examination in trigonometry, including both plane and spheric trigonometry.

Physics and chemistry. There should be continuous courses of one year in both physics and chemistry. Laboratory work should be required. Lists of experiments should be given in the syllabus and the successful performance of a certain number should be a condition for admission to the examinations, of which laboratory note books should also form a part.

Earth science. There should be continuous courses of one year in both physical geography and geology. The course in physical geography should be recommended for the first or second academic year, so that when practicable it may be followed immediately by geology. Topics of a geologic nature heretofore included in the syllabus in physical geography should be omitted.

Biologic sciences. There should be continuous courses of one year in both botany and zoology. In botany, zoology, physiology and hygiene, topics should be assigned for special study as in history and literature. Announcements of special topics should be made some time in advance and should include hints as to books and other sources of information. Where special topics have been assigned teachers should not overburden the minds of students with minutiae in the rest of the field, such as in zoology, e. g. the memorizing of Latin names of orders and families of branches of animals not assigned for special study, or the description of animals which are not ordinarily procurable in a condition fit for study in the class. Laboratory notebooks should form a feature of the examinations.

In botany more stress should be laid on the study of the life processes of plants and their general morphology. Members of the lower as well as of the higher plant families should be suggested for study. There should also be a general study of the characteristics and habits of several important families as manifested in representative plants. Stress should be put on the study of plants when possible in their natural surroundings.

The work in zoology should be confined largely to the animals mentioned in the syllabus, on the supposition that the knowledge required will be derived mainly from the study of the animals themselves after the methods laid down in the numerous laboratory guides now available.

In physiology more stress should be laid on the cell theory and on the digestive processes. More attention should also be paid to different kinds of food and their relative digestibility and to simple experiments illustrating physiologic phenomena.

History. Two counts each should be assigned to Greek and Roman history. French history and one reading course in U. S. history should be omitted. In U. S. history a more elementary syllabus requiring much biographic reading, and the elements of civil government should be prepared. In advanced U. S. history the present syllabus should be revised and the outlines should include the history of national finance and of civil service reform. The syllabus in New York history should not be changed, but after 1900 a short reading course should be added to the present requirements.

Stenography and bookkeeping. Outlines in stenography and bookkeeping should be made more explicit.

Drawing. There should be few changes in the outlines in geometric and working drawings. The syllabus in pictorial drawing and in decorative drawing, however, should be revised, specially as regards the text in historic ornament and all the plates selected for study in the schools.

Business subjects. The special subjects for state business credentials, given as higher examinations, should be credited as follows toward academic credentials:

State business diploma and state business certificate

2 Bookkeeping	2 Commercial arithmetic
2 Commercial law	2 Business and office methods
2 English	2 Commercial geography and history of commerce

State stenographers diploma and state stenographers certificate

2 English	2 Typewriting

Credentials. These should be the same as in the 1895 revision except that permission should be granted to substitute Latin or Greek for the English now required for diplomas and for 24, 36 and 48 count certificates. This change, however, should be made only with the definite understanding that the Latin or Greek papers of all students who claim this privilege will be revised carefully for English.

Program. The program should be modified by placing 11th and 12th year subjects in the first three days and the preacademic subjects in the last two days of the week.

SUMMARY OF APPENDIX

For the convenience of the reader some of the tables and other information have been transferred to the appendix. These are described briefly as follows:

Table A. Summary of secondary schools chartered or admitted to the University in 1898. Absolute charters were granted to eight academies and certificates of admission to three as branches of the Academy of Mt St Vincent. 52 certificates of admission were issued to high schools and academic departments. The total net property of all these institutions was $1,981,571.10, the average net property $33026.18.

Table B. List of 18 academic departments whose names were changed to high schools in 1898.

Table C. Honor roll of schools sending 10 or more students to college. In 1898 the following, included in 1897, do not appear: Newburg free academy, Albany high school, Lockport union school, Alfred academy. Correspondence with these schools gives as a rule financial depression as the cause, and in almost every case comparatively large numbers of prospective college students are reported for 1899.

Table D. List of 32 schools in which all students hold regents preliminary certificates.

Table E. A comparison in faculty, students and credential grants of the 10 largest high schools, the 10 largest academies, the 10 smallest high schools, the 10 smallest academies.

Averages show 37.8 instructors, 1292.3 students, $1427 in credential grants in the 10 largest high schools, as compared with 1, 9.1, $5 respectively in the 10 smallest high schools, 4.5, 107.1, $184.10 respectively in all high schools; 21.4 instructors, 361.2 students, $302 in credential grants in the 10 largest academies, as compared with 2.3, 19.1, $8.50 respectively in the 10 smallest academies, 7.7, 88, $113.44 respectively in all academies.

Averages for all New York secondary schools show 5.1 instructors, 103.3 students and $172.60 in credential grants.

Table F. Academic studies table. This is discussed fully under academic examinations.

Tables G-I. Actual and suggested courses of study. These are discussed under revisions of academic syllabus.

Tables J-M. Entrance requirements of leading colleges in United States and Canada. These are discussed under revision of academic syllabus.

Tables N, O. A part of the study of New York school population and enrolment, showing that 51% of those who could be enroled in secondary schools are so enroled as compared with 80% in the elementary schools.

Exhibit P. Information relative to equipment for secondary schools.

Respectfully submitted

Regents office, Albany, N. Y.
February 1899

JAMES RUSSELL PARSONS JR
Director

APPEN-

TABLE

INCORPO

Teaching

Summary of charters

NAME	Post-office	County	Date	Grade	b Inspector
Absolute charters					
Friends academy	Locust Valley	Queens	27 Je 98	acad.	C
Holy Cross academic school	Albany	Albany	16 D 97	j. a.	C
Round Lake academy	Round Lake	Saratoga	4 N 97	acad.	Cl
St James academy of Brooklyn	Brooklyn	Kings	16 D 97	acad.	W
St Joseph's acad. school of Batavia	avia	Genesee	16 D 97	m. a.	W
St Mary's academy of Littlefalls	Littlefalls	Herkimer	22 Mr 98	acad.	W
Ursuline seminary	New Rochelle	Westchester	22 Mr 98	acad.	C
Watervliet academy	Watervliet	Albany	22 Mr 98	acad.	C
Academies admitted					
a Holy Cross acad. of Manhattan	New York	New York	27 Je 98	acad.	C
a St Gabriel's acad. of Manhattan	New York	New York	27 Je 98	acad.	C
a St Lawrence's acad. of Manhat'n	New York	New York	27 Je 98	acad.	C
High schools and academic departments admitted					
Almond union school	Almond	Allegany	16 D 97	j	W
Broadalbin union school	Broadalbin	Fulton	4 N 97	j	W
Brushton union school	Brushton	Franklin	4 N 97	j	C
Burdett union school	Burdett	Schuyler	27 Je 98	j	A
Campbell union school	Campbell	Steuben	4 N 97	j	W
Chaumont union school	Chaumont	Jefferson	22 Mr 98	j	C
Cherry Creek union school	Cherry Creek	Chautauqua	16 D 97	j	W
Cincinnatus union school	Cincinnatus	Cortland	16 D 97	j	K
East Islip union school	East Islip	Suffolk	27 Je 98	j	Cl
Elba union school	Elba	Genesee	4 N 97	j	Cl
Elmira Heights union school	Elmira Heights	Chemung	27 Je 98	j	W
Frewsburg union school	Frewsburg	Chautauqua	16 D 97	j	W
Georgetown union school	Georgetown	Madison	22 Mr 98	j	*c*
Girls high school	Brooklyn	Kings	16 D 97	h. s.	C
Hammond union school	Hammond	St Lawrence	4 N 97	j	C
Hannibal union school	Hannibal	Oswego	22 Mr 98	j	C
Hartwick union school	Hartwick	Otsego	22 Mr 98	j	D
Highland Falls union school	Highland Falls	Orange	22 Mr 98	j	Cr
Irondequoit union school	Irondequoit	Monroe	22 Mr 98	j	C
Lafargeville union school	Lafargeville	Jefferson	27 Je 98	j	C

[a] Branch of Academy of Mt St Vincent. [b] A=S. Dwight Arms; C=Charles N. Cobb; Cl=Arthur G.
[c] Subject to inspection. [d] Leased. [e] Includes grounds. [f] Public library completes requirements.

DIX

A

RATION

institutions

and admissions 1898

VALUE OF							DEBTS	NET PROPERTY
Grounds	Buildings	Library	Apparatus	Furniture	Museum	Other property		
$1 200	$42 500	$350	$450	$3 650	....	$65 690 06	$981 19	$112 858 87
d 3 500	*d* 12 700	*d* 219 65	*d* 254 60	*d* 835	....	....	....	*d* 17 509 25
1 000	13 000	750	500	350	....	12 000	....	27 600
15 000	20 000	? 500	? 300	3 639	....	....	2 000	37 489
d 6 000	*d* 30 000	500	250	1 850	$146	....	....	38 746
d 4 000	*d* 16 000	? 700	250	1 426	25	....	....	22 401
40 000	40 000	*f* ? 250	? 250	? 1 000	....	....	29 000	52 500
d 1 000	*d* 20 000	*d* 500	*d* 360	*d* 1 700	*d* 170	....	....	*d* 23 730
51 500	210 100	2 516	514	6 324	50	....	....	271 004
?	*e* 30 400	560	609 15	1 250	300	....	....	38 119 15
24 000	44 441	509 85	271 44	1 656 65	....	....	....	70 878 94
400	1 000	200	100	200	....	... .	....	1 900
500	4 500	200	? 100	? 500	....	....	*g* 3 000	2 800
500	2 500	200	100	285	....	....	....	3 585
500	2 500	393	151 10	250	....	285	*g* 1 000	3 079 10
500	3 500	200	100	619	....	179 22	....	5 098 22
500	6 500	200	100	50	....	....	....	7 350
400	2 000	200	168	200	....	? 650	....	3 618
500	3 500	270 40	175	100	....	? 358 44	*g* 800	4 108 84
1 500	15 000	200	175	1 000	....	2 875	*g* 7 000	13 750
400	2 500	?250	131	200	....	....	....	2 981
3 200	15 000	250	332 96	1 342 24	....	1 650	*h* 18 000	3 775 20
1 000	4 500	? 219 25	? 151 15	200	....	....	....	6 070 40
300	2 500	204	141	310	....	....	*g* ? 1 200	2 255
100 000	400 000	8 000	2 500	30 000	200	....	....	540 700
350	3 300	240	100	150	....	....	....	4 140
500	8 500	200 95	153 60	60	....	879 85	....	10 294 40
200	1 100	250	150	156 75	....	....	....	1 856 75
9 000	17 000	*f* 170	142	1 500	....	1 977	*i* 8 300	21 489
600	7 500	200	143 75	529 95	....	509 90	*i* 3 500	5 983 60
500	4 000	200	100	300	....	? 500	....	5 600

Clement; Cr=I. O. Crissy; D=Charles Davidson; K=Roland S. Keyser; W=Charles F. Wheelock·
g Includes bonded indebtedness. *h* Includes $17000 bonded indebtedness. *i* Bonded debt.

Summary of charters

NAME	Post-office	County	Date	Grade	[a] Inspector
ood union school	Lakewood	Chautauqua	4 N 97	j	W
ton union school	Lewiston	Niagara	27 Je 98	j	L
gston Manor union school	Livingston Manor	Sullivan	22 Mr 98	j	W
ias union school	Machias	Cattaraugus	22 Mr 98	j	C
naroneck union school	Mamaroneck	Westchester	27 Je 98	j	C
nual Training high school	Brooklyn	Kings	16 D 97	h. s.	C
asten Park high school	Buffalo	Erie	16 D 97	h. s.	b
illbrook memorial school	Millbrook	Dutchess	4 N 97	j	C
Moira union school	Moira	Franklin	4 N 97	j	C
Moscow union school	Moscow	Livingston	16 D 97	j	W
Mount Kisco union school	Mount Kisco	Westchester	4 N 97	m	C
New York boys high school	New York	New York	27 Je 98	h. s.	C
New York girls high school	New York	New York	27 Je 98	h. s.	C
New York Mills union school	New York Mills	Oneida	16 D 97	j	W
New York mixed high school	New York	New York	27 Je 98	h. s.	C
North Collins union school	North Collins	Erie	4 N 97	j	W
North Lawrence union school	North Lawrence	St Lawrence	22 Mr 98	j	C
Oakside union school	Peekskill	Westchester	22 Mr 98	m	Cl
Orient union school	Orient	Suffolk	22 Mr 98	j	Cl
Panama union school	Panama	Chautauqua	27 Je 98	j	L
Parishville union school	Parishville	St Lawrence	22 Mr 98	j	C
Pocantico Hills union school	Pocantico Hills	Westchester	27 Je 98	j	Cl
Ponckhockie union school	Kingston	Ulster	22 Mr 98	j	Cl
Redwood union school	Redwood	Jefferson	4 N 97	j	C
Rensselaer Falls union school	Rensselaer Falls	St Lawrence	22 Mr 98	j	C
Rockton union school	Rockton	Montgomery	4 N 97	j	
Shelter Island union school	Shelter Island	Suffolk	4 N 97	j	
Southold union school	Southold	Suffolk	4 N 97	j	
Three Mile Bay union school	Three Mile Bay	Jefferson	22 Mr 98	j	
Troupsburg union school	Troupsburg	Steuben	16 D 97	j	
Washingtonville union school	Washingtonville	Orange	4 N 97	j	
Wellsburg union school	Wellsburg	Chemung	22 Mr 98	j	
Total					
Average					

---

[a] C=Charles N. Cobb; Cl=Arthur G. Clement; L=Eugene W. Lyttle; W=Charles F.
the village forever in trust to hold and maintain for the purpose of a public school un
ment. *g* Pianos; value of other furniture not known as it was deeded with grounds an
Reincorporated. 22 Mr 98, Academy of Mt St Vincent was reincorporated as an ac

TABLE B

Names changed 1898

From	To	Date
Allegany union school	Allegany high school	27 Je 98
Buffalo high school	Buffalo central high school	16 D 97
Cornwall union school	Cornwall high school	4 N 97
Corona union school	Corona high school	16 D 97
De Ruyter union school	De Ruyter high school	4 N 97
Far Rockaway union school	Far Rockaway high school	4 N 97
Franklin acad. and union school, Prattsburg	Franklin acad. and Prattsburg high school	27 Je 98
Genesee Valley seminary and union school	Belfast high school	27 Je 98
Glens Falls union school	Glens Falls high school	4 N 97
Lawrence Station union school	Lawrence high school	4 N 97
McGrawville union school	McGraw union school	27 Je 98
Mechanicville union school	Mechanicville high school	4 N 97
Mexico union school	Mexico acad. and high school	27 Je 98
Oneida union school	Oneida high school	4 N 97
Port Byron free school and acad.	Port Byron high school	4 N 97
Silver Creek union school	Silver Creek high school	4 N 97
South Glens Falls union school	South Glens Falls high school	4 N 97
Tarrytown union school	Washington Irving high school	4 N 97

TABLE C

Honor roll of schools sending 10 or more students to college

'93	'94	'95	'96	'97	'98	
25	38	35	41	47	45	Polytechnic inst. of Brooklyn, acad. dep't
a	25	24	30	40	40	Brooklyn boys high school
18	21	18	14	30	36	Adelphi academy
24	53	33	33	45	31	Ithaca high school
a	21	*a*	29	25	31	Syrian protestant college, acad. dep't
41	21	39	56	37	29	Syracuse high school
a	*a*	18	26	23	25	Cascadilla school
a	*a*	8	15	17	22	Trinity school
38	27	26	21	33	20	Buffalo central high school
29	29	38	37	13	20	Rochester free academy
15	13	23	10	14	19	Troy academy
13	16	17	23	7	18	Utica free academy
18	20	25	13	14	16	Colgate academy
6	13	10	3	?	16	Yonkers high school
3	3	6	8	10	15	Packer collegiate institute
7	7	12	12	10	13	Binghamton high school
23	19	20	16	18	12	Elmira free academy
13	11	14	?	10	11	Auburn high school
13	8	4	10	5	11	Jamestown high school

a No report.

TABLE E

The bracketed figure after the name of each school tells in how many of these columns it finds a place; i. e. in how many of the three points considered it is among the first or last 10.

1898 Maximum: 10 high schools (tax supported)

Academic faculty		Students		[e] Earned on credentials	
1 Brooklyn girls (2)	81	1 Brooklyn girls (2)	3 118	1 Buffalo central (3)	$4 675
2 Brooklyn boys (2)	46	2 Brooklyn boys (2)	1 406	2 Albany (2)	1 595
3 Masten Park (3)	38	3 Syracuse (3)	1 356	3 Masten Park (3)	1 200
4 Buffalo central (3)	37	4 Buffalo central (3)	1 251	4 Elmira (1)	1 190
5 Syracuse (3)	35	5 Masten Park (3)	1 243	5 Watertown (1)	1 140
6 Rochester (3)	31	6 Manual training (2)	1 073	6 Jamestown (1)	965
7 Manual training (2)	30	7 New York boys (2)	897	7 Hornellsville (1)	925
8 Albany (2)	27	8 New York girls (2)	888	8 Ithaca (1)	915
9 New York girls (2)	27	9 Rochester (3)	879	9 Syracuse (3)	900
10 [b]Erasmus Hall (1)	26	10 New York mixed (1)	812	10 Rochester (3)	765

1898 [a] Minimum: 10 high schools (tax supported)

1 Altmar (1)	1	1 Amenia (1)	4	1 Baldwin (2)	5
2 Arkport (1)	1	2 Honeoye (1)	5	2 Cincinnatus (1)	5
3 Ausable Forks (1)	1	3 Ravena (1)	6	3 Greenwood (1)	5
4 Baldwin (2)	1	4 Depew (2)	7	4 Highland (1)	5
5 Brownville (1)	1	5 Hollis (1)	9	5 Lestershire (1)	5
6 Central Valley (2)	1	6 Hinsdale (1)	10	6 Marlboro (1)	5
7 Coeymans (1)	1	7 East Hampton (1)	11	7 Mooers (1)	5
8 Corfu (1)	1	8 Central Valley (2)	13	8 Sag Harbor (1)	5
9 Depew (2)	1	9 Katonah (1)	13	9 Silver Springs (1)	5
10 [c]Essex (1)	1	10 Stony Point (1)	13	10 Stapleton (1)	5

1898 Maximum: academies (not tax supported)

1 Packer collegiate inst. (2)	48	1 Adelphi academy (2)	1 041	1 La Salle inst. (1)	385
2 Polytechnic in., acad. dep't (2)	27	2 Poly. in., aca. dep't (2)	530	2 Pike seminary (1)	360
3 Acad. of Mt St Vincent (1)	25	3 Parker collegiate in. (2)	521	3 Cook academy (2)	340
4 Pratt inst. high school (2)	25	4 Trinity school (2)	382	4 Nazareth academy (2)	315
5 Utica female academy (1)	17	5 Fem. ac. S. H'rt, N. Y. (2)	221	5 Lansingburg acad. (1)	310
6 Albany female academy (1)	16	6 Genesee Wes'lyn sem. (1)	212	6 Glens Falls acad. (1)	275
7 Fem. aca. Sac. H'rt, K'nw'd (1)	16	7 Pratt in. high school (2)	188	7 Marion col. inst. (1)	275
8 Adelphi academy (2)	15	8 Cazenovia sem. (1)	173	8 St Mary's ac., Ogdensb. (1)	270
9 Fem. aca. Sac. Hr't, N. Y. (2)	15	9 Cook academy (2)	172	9 Keuka institute (1)	245
10 [d]Nazareth academy (2)	15	10 Syr'n pro. col. ac. dep't (1)	172	10 St Mary's cath. inst. (1)	245

[a] Excluding schools admitted during year. [b] New York boys high also had 26. [c] 26 others also had one. [d] St Joseph's, Flushing, Trinity school and Troy female also had 15. [e] 42 academies and 47 union schools did not earn anything.

ACADEMIC STUDIES

	SUBJECTS	STUDENTS							
		EXAMINED				CLAIMED			
		1895	1896	1897	1898	1895	1896	1897	1898
1	Solid geometry	657	916	1 006	1,082	465	738	702	900
2	Plane trigonometry	293	352	364	847	219	306	259	281
53	Spheric trigonometry	15	68	72	98	14	54	52	79
54	Astronomy	1 410	1 428	1 272	1 077	1 026	1 094	882	902
55	Physics, part 1	4 533	4 228	4 587	4 493	2 858	2 768	2 316	3 022
56	Physics, part 2	1 077	1 224	1 188	1 179	548	688	861	942
57	Chemistry, part 1	1 892	1 695	1 971	1 901	1 882	1 265	1 252	1 385
58	Chemistry, part 2	313	545	629	687	244	437	458	565
59	Physical geography	10 883	9 976	10 426	11 159	6 909	6 610	6 956	8 054
60	Geology	2 447	2 447	2 854	2 238	1 809	1 938	1 838	1 777
61	Botany	2 846	2 701	2 739	3 127	2 217	2 041	1 888	2 496
62	Zoology	705	869	1 082	1 319	584	672	847	1 108
63	Physiology and hygiene	19 498	18 312	21 980	22 615	11 242	11 113	13 388	14 797
64	General history	664	762	836	726	502	588	686	586
65	Greek history	2 348	2 614	2 572	2 514	1 909	2 159	2 101	1 939
66	Roman history	2 427	2 726	3 061	2 910	1 995	2 260	2 244	2 479
67	English history	3 930	3 260	4 676	4 599	2 695	2 723	3 193	3 337
68	French history	......	235	241	304	......	203	179	267
69	U. S. history	23 598	20 993	23 467	23 520	14 908	12 083	14 374	14 578
70	U. S. history, advanced	......	561	565	671	......	325	383	440
71	1st read. course U. S. hist.	......	108	100	176	......	82	79	147
72	2d read. course U. S. hist.	......	75	61	82	......	68	53	61
73	New York history	5 950	6 748	6 574	7 539	4 302	4 569	5 020	5 874
74	Civics	10 080	9 557	9 649	10 579	6 968	5 850	6 389	6 671
75	Economics	2 442	2 331	2 068	2 540	1 978	1 879	1 630	2 163
76	Sten'g'phy, 50 word test	165	194	222	509	124	108	164	262
77	Sten'g'phy, 75 word test	36	48	73	98	36	44	55	94
78	Sten'g'phy, 100 word test	42	15	68	31	35	15	32	31
79	Bookkeeping	4 996	5 283	5 090	5 837	3 962	4 338	3 316	3 812
80	Home science	.. ...	271	176	92	......	47	99	67
81	Drawing	17 668	15 648	17 340	16 446	10 492	7 621	10 247	10 475
82	Drawing, advanced	6 041	4 185	4 006	3 570	3 491	1 640	2 113	2 208
83	Psychology	380	230	185	118	333	182	155	103
84	Ethics	1 282	268	218	212	1 015	226	170	176
	Total	388 945	396 760	421 585	446 837	259 932	256 599	268 953	303 361

TABLE G

CLASSICAL

Groups	COURSE IN		64 SCHOOLS					
			Actual					
	Subjects	year	1		2		3	
		semester	a	b	a	b	a	b
History	General history		......	......	......	2	2	3
	Greek history		5	1	8	6	10	12
	Roman history		2	5	5	7	7	12
	English history		......	......	3	4	0	8
	French history		......	......	......	......	......	1
	U. S. history		30	21	2	1	2	1
	New York history		......	......	......	......	......	......
	Medieval history		......	......	1	1	......	1
	Modern history		......	......	1	1	......	......
Other	Civics		7	5	6	5	3	5
	Economics		......	......	......	......	......	1
	Bookkeeping		1	......	......	2	1	2
	Drawing		13	17	1	1	1	......
	Advanced drawing		1	2	......	......	......	......
	Ethics		......	......	......	......	......	......

TABLE M

ADMISSION TO ENGLISH COURSE

In 12 leading colleges

Groups	Subjects	1	2	3	4	5	6	7	8	9	10	11	12
English language	College entrance English	8	8	8	8	8	....	8	8	8	8	8	8
	Advanced English	2	....	....	....	....	2	....	....	....	....	....	....
	Additional English	8	....	4	8	....	2	....	....	....	....	4	....
	Rhetoric	....	2	....	....	....	2	....	....	....	....	....	....
	English composition	....	....	....	....	....	2	....	....	....	....	....	....
	English literature	....	....	....	....	....	2	....	....	2	....	....	4
Modern and ancient language	Latin, 1st year	4	....	*a*	....	4	....	4	....	....	....	4	*a*
	Caesar's Commentaries	4	....	*a*	....	4	....	4	....	....	....	....	*a*
	Virgil's Aeneid	4	....	....	....	4	....	4	....	....	....	....	....
	Cicero's Orations	2	....	....	....	2	....	2	....	....	....	....	....
	Latin composition	1	....	....	....	1	....	....	....	....	....	....	....
	Ovid's metamorphoses	1	....	....	....	....	....	1	....	....	....	....	....
	German, 1st year	*a*	4	4	4	....	*a*	....	4	4	4	....	4
	German, 2d year	*a*	4	4	4	....	....	*a*	3	4	....	....	4
	German, 3d year	....	4	....	....	....	....	....	3	....	....	....	....
	French, 1st year	*a*	....	*a*	4	4	....	4	4	*a*	4	4	*a*
	French, 2d year	*a*	....	*a*	4	....	....	4	3	*a*	....	....	*a*
	French, 3d year	....	....	....	....	....	....	....	3	....	....	....	....
Mathematics	Algebra	4	4	4	4	4	4	4	4	4	4	4	4
	Plane geometry	4	4	4	4	4	4	4	4	4	4	4	4
	Solid geometry	....	2	2	2	2	....	....	....	2	....	....	2
Science	Physiology and hygiene	....	....	....	....	....	2	....	2	2	....	2	2
	Physics, part 1	2	2	2	2	2	2	2	2	2	....	2	2
	Physics, part 2	2	2	2	2	....	2	2	2	....	....	....	2
	Chemistry, part 1	*a*	2	2	*a*	2	....	*a*	....	2	....	....	....
	Chemistry, part 2	....	2	2	*a*	....	....	*a*	....	....	....	....	....
	Botany	....	....	2	....	2	2	....	....	2	....	2	4
	Astronomy	....	....	....	....	....	2	....	....	....	....	....	....
	Biology	....	4	....	....	....	....	*a*	....	....	....	....	....
	Physical geography	....	....	....	....	....	2	....	....	....	....	2	....
History	U. S. history	2	2	4	....	....	2	2	2	2	2	2	2
	Eng. history	....	....	4	2	....	....	....	2	*a*	....	....	2
	Greek history	....	....	....	1	1	....	2	*a*	*a*	2	1	....
	Roman history	....	....	....	1	1	....	2	*a*	*a*	2	1	....
	General history	....	2	2	....	*a*	2	....	....	2	....	....	....
	Ancient history	4	....	....	....	....	....	....	....	....	....	....	
	Medieval history	2	....	....	*a*	....	....	....	....	....	....	2	....
	Modern history	2	....	....	....	....	....	....	....	....	....	....	....
Other	Civics	2	....	....	....	....	....	....	....	2	....	2	..
	Economics	....	....	....	....	....	2	....	....	....	....	....	.
	Drawing	....	2	....	....	....	....	....	....	....	....	....	.
	Total number of counts	58	50	50	50	45	36	50	46	42	30	44	

a As an alternative

EXHIBIT P

APPARATUS

Money expended for maps, charts and globes for other than academic work, repairs to apparatus, chemicals, perishable supplies such as test tubes, bursting squares, Rupert's drops, corks, filter paper and rubber tubing, boxing and transportation charges will not be duplicated. In the case of homemade apparatus the University will duplicate for the completed article on appraisal and approval of an inspector, but not for materials. The expense of a competent expert may be allowed for classifying and labeling a collection of minerals so as to transform them from a miscellaneous mass of specimens into a well-organized collection suitable for instruction, but not for reclassifying and relabeling a collection which has been allowed to get into confusion.

List prices are quoted from which a discount of from 5% to 25% will be allowed by dealers. Schools intending to buy are advised to get estimates from two or more dealers. The fact that an article is found in the following list does not mean that the University will duplicate for its purchase by every school regardless of equipment and other conditions. On the contrary each individual case is subject to the approval of a University inspector.

The articles enumerated below will be found most helpful in the laboratory. They may be obtained from any good hardware store at a small discount from the list prices quoted.

	Price list	
Burner, Bunsen	$ 50	
Calipers (spring) outside	1	
Calipers (spring) inside	1	
Calipers, Vernier	3	
Cold chisel	.40	
Cork borers, set of six	1	
Dividers (spring)	1	
File, round, 6 in	15	
File, three cornered, 6 in	15	
Glass cutter	20	
Gage, American wire, 5 to 36	2 50	
Gauze, wire 4x4	10	
Graduate, cylindric, English and metric	25–	$1 50
Hammer, claw	50	
Lamp, alcohol	40	
Magnifier, pocket	25–	75
Mercury, per lb	75	
Stone, oil	60	
Pliers, flat nose with wire cutter, 6 in	80	

	Price list	
Table, rotating	$6	
Tower, leaning	1 50	
Tubes, capillary	1 25–	$2
Weights, avoirdupois, iron, 1 oz. to 1 lb.	1	
Weights, ½ gr. to 10 gr	50	
Weights, metric brass, 50 grams to 1 centigram	1	

Hydrodynamics

Bottle, specific gravity	90	
Cup, Tantalus	75–	1 50
Hydrometer, demonstration	20	
Hydrometer, light	50	
Hydrometer, heavy	50	
Hydrometer, Nicholson's	2 50	
Imp, bottle, with jar	80	
Jar, hydrometer	50	
Mill, Barker's, glass model	4 50	
Press, hydraulic, glass model	2	
Press, hydraulic, for breaking bars of wood and iron	25	
Pressure of liquids, apparatus	1 35	
Pressure, upward, apparatus	1 50	
Principle, Archimedes	1 75	
Pump, force, glass model	2 50	
Pump, lifting, glass model	2 50	
Ram, hydraulic, glass model	4	
Siphon, glass	30	
Tubes, equilibrium	2	
Tubes, V shaped	50	
Vase, buoyancy	1 75	
Vase, Paschal's	4 50	

Pneumatics

Bag, rubber, with stop cock	1 50
Barometer, aneroid	10
Barometer, mercurial	6
Chamber, condensing	6
Fountain, Hero's glass	3
Fountain in vacuo	5
Gage, vacuum	3
Glass, hand and bladder	
Globe, hollow copper for weighing air	
Hammer, water	
Hemispheres, Magdeburg, iron	
Mariotte's law apparatus	
Pump, air	
Pump, air, Sprengel	
Receiver, glass, 2 gal	

	Price list
Tubes, acoustic	$2 75
" Hopkins'	3
Wheel, Savart's	6
Xylophone	1 50

Optics

Apparatus for experiments with lenses	$1 10
Camera lucida	7 50
Disk, Newton's color	1 50
Incidence and reflection apparatus	1
Kaleidoscope	1
Lenses, set of demonstration	2 50
Mica, specimen of	30
Mirror, concave	3
" convex	2 75
" plain	50
Photometer	7
Polariscope	4
Port lumiére	15
Prism, achromatic	3
" bisulphid of carbon	3
" glass	35– 1
" Nichol's	3
Reflection of light apparatus	1 50
Reflectors, parabolic, per pair	8
Spar, Iceland	50
Spectroscope, pocket	10
Tongs, tourmaline	3
Vision, persistence of	60

Electricity

Ammeter	12
Bag, Faraday's	1 25
Balls, pith, per doz	25
Battery, dry	40
Battery, Grenet, qt	3
" plunge, per cell	3
" Samson	1 50
Bell, electric	1
Binding posts	15
Bridge, Wheatstone	3 –
Cell, decomposing	2 50
Chimes, electric	1 50
Cylinder, induction	3 50
Coil, demonstration	6
" lifting	1 50
" Ruhmkorff 1½ in. spark	8

Chemical apparatus	*Price list*	
tic hydrogen generator	$3	
s, qt. $1.25, gallon	1 75	
sand	25	
water	1 25	
pipe	25	
es, reagent per doz	2 -	3
e, Woulff	25-	2
ttes	25-	1
erolles	50-	1 50
mp, for test tubes	15	
cks, pinch	15	
ucibles, Hessian	05-	40
shes, evaporation	15-	50
ishes, lead	35	
istillation apparatus	10	
ropper	05	
Flasks, evolution round and flat bottoms	15-	50
Funnels, glass	10-	50
Glasses, beaker, per nest of 3	25-	75
Glasses, watch, per doz	25-	60
Jars, specimen, per doz	6	
Mortar, wedgewood	50	
Platinum foil and wire, per gram	45	
Rack, test tube	30	
Retorts, glass 8 oz	25-	40
Retorts, copper, 2 qt	4	
Rod, stirring, of glass	15	
Spatula	25	
Spoon, deflagrating	20	
Stoppers, rubber, per doz	25-	
Tongs, crucible	75	
Tripod, malleable iron, 6 in., 3 rings	60	

Mineral collections

	Price list			
108 crystal models, hardwood	$24	50 for	$15	George lish
40 " cut glass	30	21 for	18	
Preston's crystal models	16			
Washington school collection no. 1	2			
" 2	2			
" 3	2			
" 4	3 50			
Academy collection, 200 specimens			100	

Yagge's anatomic chart		$35
Yagge's geographic chart	$45	
Blodgett's historical chart	22 50	$7 50 allowed
Mac Conn historical chart	15	
Natural history diagrams for botany and zoology, each	1 20	
Zoologic wall charts, each	1 10	
Advanced music chart	12	

Maps

Rand, McNally Globe ser. single map on spring roller	5	
Rand, McNally, Globe ser. set 8 maps in spring roller case	42	
Rand, McNally, Diamond ser. set 8 maps in spring roller case	44	
Rand, McNally, Columbia ser. set 7 maps in spring roller case	50	
Kiepert's physical maps, each	7	
Kiepert's wall maps of ancient history	6 -	8
W. & A. K. Johnston's natural ser., single maps	5	
Relief maps, set 7 in case	100	30 allowed
Parker's new structural maps, each	8 -	12

Globes

Terrestrial fully mounted, 12 inch	25	
Terestrial meridian, 12 inch	20	
Solar telluric globe	15	
Andrew's lunar tellurian	30 50	
Kendall's lunar tellurian	30	
Sweigert's lunar tellurian	42 50	

Gymnasium

Chest weights	8 -	12
Horizontal bars with guys	15 -	25
Horizontal bar, hickory	1 50-	2 50
Parallel bars	15 -	25
Indian clubs, per pair	40-	1
Dumb bells, wood, per pair	25-	50
Dumb bells, iron, per lb	05	
Wands, maple or hickory	50-	1
Vaulting horse	25 -	40
Traveling rings complete	4	
Exercising rings, wood	50	
Striking bag	4 -	

Manual training

Bench fitted for four pupils	10	
Bench, single	6 -	
Lathe, foot power or countershaft	35	

Dealers in school supplies

The University assumes no responsibility for the financial standing of any dealer

American Roentgen ray co., Boston, Mass.
X ray apparatus

American school supply co., Chicago, Ill.
Maps, charts, globes and school furniture

Bardeen, C. W., Syracuse, N. Y.
Maps, globes and school supplies

Bausch & Lomb, Rochester, N. Y.
Optical and laboratory supplies

Becker, Christian, 117 Chamber st., New York
Fine balances and weights of precision

Biddle, J. G., 910 Drexel bldg., Philadelphia, Pa.
Electric measuring instruments, physical apparatus, X ray apparatus

Buff & Burger, Boston, Mass.
Engineers and surveyors insruments

Bullock & Crenshaw, Philadelphia, Pa.
Physical and chemical apparatus

Bunnell & Co., 76 Cortlandt st., New York
Electric instruments and supplies

Caproni, P. P. & Bro., Boston, Mass.
Plaster casts

Castelvecchi, L., 143 Grand st., New York
Plaster casts

Central school supply co., Chicago, Ill.
Physical and chemical apparatus, maps, charts and schools furniture

Chandler & Barber, Boston, Mass.
Manual training tools and supplies

Colt, J. B. & Co., 115 Nassau st., New York
Projection lantern and slides, acetylene generators

Eimer & Amend, New York
Physical and chemical apparatus, chemicals

Elbridge electrical apparatus co., Elbridge, N. Y.
Handpower dynamos and motors

English, George L. & Co., 64 E. 12th st., New York
Geologic specimens

Foote, Dr E. A., 1317 Arch st., Philadelphia, Pa.
Geologic specimens

Hammett, J. L. Co., Boston, Mass.
Maps, charts and globes

Physical apparatus, lists and prices, 425–29.

Physical geography, increase in answer papers, 342^7; recommendation on study, 371^8; suggestions for syllabus, 387^1.

Physics, suggestions for syllabus, 386^8.

Physiology, increase in answer papers, 342^7; suggestions for syllabus, 387^3; models for study of, 431^3.

Preliminary certificates, increase in number issued, 331^4; students holding, 375^7, 395.

Principals, qualifications and salaries, 336^8–40^3; payment of expenses, at meeting of Associated academic principles, 354^8.

Promotions, per cent of pupils not promoted, 423.

Pupils, *see* Students.

Question papers, criticism, 344^7–45^8, 402–3; protection of, 353^2; extra orders, 353^6.

Reading, recommendation of syllabus committee on, 370^5.

Regents credentials, issued, 331^1–32^8; apportionment for, 332^4, 396–97; value, 342^8.

Reorganization of departments, 325^7.

Rhetoric, increase in answer papers, 342^7.

Rhetorical exercises, 375^6.

Roman history, decrease in answer papers, 342^9; counts, 372^9; suggestions for syllabus, 387^8.

Roosevelt, Gov., on appropriations for high schools, 328^8.

Salaries, of teachers, 326^8, 336^8–40^8.

School population and enrolment, 329^8–30^9, 423.

School supplies, dealers in, 434–36.

Schools, *see also* Secondary schools.

Schott, Wilhelm, review of examination questions, 345^2.

Science, suggestions for syllabus, 374^2.

Scientific course, college admission requirements, 420–21.

Scudder, M. T., resignation, 355^6.

Secondary schools, taking regents examinations, 342^4; change of name, 351^9–52^8, 394^1; failure to meet requirements, 352^7; report on incorporations, 390–93; sending greatest number to college, 394^8–95^2; maximum and minimum tables, 396–97. *See also* Academies; High schools; Students.

Senior schools, requirements for grading, 351^3.

Singing, exercises in, 375^6.

Spelling, increase in answer papers, 342^6; recommendation on study, 370^5.

State library, 325^7.

State museum, 325^7.

Stenographers diploma, 388^3.

Stenography, increase in answer papers, 342^8; suggestions for syllabus, 388^3.

Students, number, 326^7, 327^9–29^8, 375^7; graduates, 328^1; age of graduates, 375^8; holding preliminary certificates, 327^9, 375^7, 395^8; not promoted, 423.

Subjects, number in schedule of examinations, 374^1.

Syllabus, *see* Academic syllabus.

Tables, description, 388^6–89^8; charters and admissions, 390–93; college entrance requirements, 416–22; actual and suggested courses of study, 404–15; summary of examination reports, 398–403; names changed, 394; school population and enrolment, 423; schools send-

X10 Examination papers 1896. 502p. Oct. 1896. *Price 50 cents; small paper ed. uniform with previous vols., pap., 25 c. boards 50 c.*

See also Question papers.

X11 Davis, W: M. (Harvard) State map of New York as an aid to the study of geography. 27p. Nov. 1896. *Price 5 cents.*

Based on the topographic map in preparation by the U. S. geological survey.

X12 Report of examination department 1896. 114p. Jan. 1897. *Price 15 cents.*

X13 College-entrance English. 147p. June 1897. *Price 15 cents.*

Present English entrance requirements of representative colleges and universities. Also discussions on aims and methods in teaching secondary school English.

X14 Examination papers 1897. 578p. Aug. 1897. *Price, see* X10.

See also Question papers.

X15 Report of examination department 1897. 120p. Nov. 1897. *Price 15 cents.*

X16 Examination papers 1898. 514p. Sep. 1898. *Price, see* X10.

See also Question papers.

High school bulletins. University of the State of New York — High school dep't. Bulletins. O. Albany 1898–date. *Price to advance subscribers 50 cents a year.*

X17 Report of high school department. (High school bulletin 1). Mar. 1899. 121p. *Price 15 cents.*

X18 Associated academic principals. Proceedings of the 14th annual conference, Dec. 1898. (High school bulletin 2). *In preparation.*

College bulletins. University of the State of New York — College dep't. Bulletins. O. Albany 1898–date. *Price to advance subscribers 50 cents a year.*

K1 Report of college department 1898. 126p. Jan. 1899. *Price 15c.*

K2 Business syllabus. *In press.*

Question papers. University of the State of New York — Examination dep't. Examination papers; for the academic year 1892 (v. 1); 1893 (v. 2); 1894 (v. 3); 1895 (v. 4). v. 1–4, D. Albany 1892–95. *Price in boards, 50 cents a volume; in paper, 25 cents.*

For 1896 *see* X10; for 1897 *see* X14; for 1898 *see* X16.

Each volume contains all the regents question papers of that year in any of the academic, professional law, medical, dental, veterinary, library and extension examinations.

H3 Examination handbook. 46p. *Price 4 cents.*

History, times, places and subjects of academic, law, medical and veterinary student examinations; explains credentials and apportionment of academic fund.

University of the State of New York

High School Department

Bulletin 2 November 1899

New York State Science Teachers Association

PROCEEDINGS OF THE THIRD ANNUAL CONFERENCE

Held at Columbia university, New York city, December 29-30, 1898

INCLUDING

Proceedings of the first and second annual conferences

SUMMARY OF SESSIONS

Thursday, December 29, 9.30 a. m.

Meeting of executive council

Registration

Opening session; called to order by Prof. EDWARD L. NICHOLS, *chairman.*

Address of welcome
Pres. SETH LOW, Columbia university.

Response
Prof. EDWARD L. NICHOLS, Cornell university, retiring president of the association.

Introduction by Prof. NICHOLS of President-elect Prof. CHARLES W. HARGITT, Syracuse university.

Zoology as a condition for admission to college
Dr CHARLES B. DAVENPORT, Harvard university.

Discussion:

Prof. Edwin G. Conklin, University of Pennsylvania.
Arthur E. Hunt, Manual training high school, Brooklyn.
Prof. James E. Peabody, Boys and girls high school, New York.
Prof. Charles W. Dodge, University of Rochester.
Dr Henry A. Kelly, Ethical culture schools, New York city.
Charles B. Scott, Oswego normal school.
R. Ellsworth Call, Children's museum, Brooklyn institute of arts and sciences.
Dr Frank M. McMurry, Teachers college.
Dr Charles B. Davenport, Harvard university.

Thursday, 2.30 p.m.

Meeting called to order by Prof. Le Roy C. Cooley, *chairman*.

Report of the committee of nine, presented by Prof. Le Roy C. Cooley.

Reports of subcommittees:

Nature study
  Presented by Charles B. Scott, Oswego normal school.
Earth sciences
  Presented by Prof. Richard E. Dodge, Teachers college.
Botany
  Presented by Prof. George F. Atkinson, Cornell university.
Physics
  Presented by Prof. William Hallock, Columbia university.

Union meeting, Schermerhorn hall, Columbia university.

On invitation of the American society of naturalists, the association united with them in their annual discussion, which is reporte in full in the proceedings of that society.

Advances in methods of teaching:

Zoology
  Prof. Edwin G. Conklin, University of Pennsylvania.
Anatomy
  Prof. George S. Huntington, Columbia universit[illegible]

Physical geography in the first or second year of the high schoo

Prof. RICHARD E. DODGE, Teachers college.
EZRA W. SAMPSON, Mixed high school, New York city.
Miss L. BELLE SAGE, Olean high school.

Discussion:

R. ELLSWORTH CALL, Children's museum, Brooklyn institu of arts and sciences.
R. H. CORNISH, Girls high school, New York city.
Sup't J. I. GORTON, Sing Sing.
PHILIP EMERSON, Corbett school, Lynn, Mass.

Section C—Nature study. CHARLES B. SCOTT, Oswego norm school, *chairman.*

1 Aims in nature study

Higher aim: To bring the child in sympathy with nature
Prin. GEORGE H. WALDEN, School 10, Rochester.

Subordinate aim: To aid in other school work
Prin. ALICE C. KING, Teachers training school, Utica.

General discussion

2 Material for study (40 minutes)

Bird study
Mrs N. DEG. DOUBLEDAY ("Neltje Blanchan," author *Bird neighbors*), New York city.

Insect study
Prof. JOHN H. COMSTOCK, Cornell university.

Plant study
CHARLES B. SCOTT, Oswego normal school.

Earth study
Prin. ANNA J. STONE, Binghamton.

General discussion.

Intermission (10 minutes). An opportunity to examine help books and work of pupils.

3 Ways of helping teachers (35 minutes)

Relation of teacher and pupil in nature study
Dr CLIFTON F. HODGE, Clark university, Worcester, Ma

Discussion:

Prin. EDWARD S. BABCOCK, Portville high school.
Prof. FRED Z. LEWIS, Canandaigua high school.
Sup't J. I. GORTON, Sing Sing.
Prof. CHARLES W. DODGE, University of Rochester.
Prof. WILLIAM HALLOCK, Columbia university.
Prof. IRVING P. BISHOP, State normal school, Buffalo.
Prof. C. W. HARGITT, Syracuse university.

Friday, 8 p. m.

Lecture—Educational value of bird study (with stereoptico trations)

FRANK M. CHAPMAN, American museum.

Adjourned

Sketch of association with brief reports of first two meeting
List of members, 1898.

SUMMARY OF ACTION

Recommendations

ADOPTED BY VOTE OF THE ASSOCIATION, DECEMBER 30,

1 In general: That science should be taught continuousl secondary schools during the four years' course and should i each of the three great divisions, according to the methods lai in the recommendations of this report.

2 In particular: That at least one typical branch of p science, and another of biologic science, and another of science, should be taught in all secondary schools, each for o with five exercises a week, in preference to the sacrifice of ei these departments for the sake of a more extended course one of them.

3 That the association approve the propositions contained reports on nature study and secondary science courses and au the necessary steps to make them effective.

These propositions relate to:

The functions of science in elementary and secondary edu

Committee reports

Resolutions. The committee on resolutions presented the fo lowing report which was unanimously adopted.

Resolved, That this association extend its thanks to *Science* f publishing a report of the proceedings of our meeting at Ithaca, De ember 1897, and for printing the program of our present meeting advance; also to the *New York school journal* and to the *Journal pedagogy,* of Syracuse, for devoting generous space to reports of t Ithaca meeting.

Resolved, That hearty thanks be extended to Pres. Low, Columbia university, for his kind words of welcome and his ma acts of thoughtful courtesy; to the trustees of Teachers colleg for the free use of their convenient and pleasant building, and for t opportunity for friendly intercourse, afforded by the reception Thursday evening; to the local committee for the careful a thorough preparation for our coming, and the anticipation of all o needs; and to the authorities of the American museum of natu history, for opening their great institution for our inspection a study.

DARWIN L. BARDWELL
IRVING P. BISHOP
Committee

Nominations. The committee presented the following names

Officers—President, Le Roy C. Cooley, Vassar college.

Vice-president, Albert L. Arey, Rochester free academy.

Secretary and treasurer, James E. Peabody, Boys and girls h school, New York city, 3 av. and 157 st.

Council—1899 John F. Woodhull, Teachers college.
1902 Charles N. Cobb, Regents office.
1902 Franklin W. Barrows, Buffalo.
1902 J. H. Comstock, Cornell university.

RICHARD E. DODGE, *Chairn*

By vote of the association the secretary was directed to ballot for the nominees as reported, and they were declared e for the coming year.

Treasurer's report

The treasurer presented the following financial report for t ending Dec. 28, 1898:

Pres. Seth Low—It gives me very great pleasure to welcome this association to Teachers college and to Columbia university. I suppose that this association unites with a general interest in science, the specific desire to improve the teaching of science by coordinating the work done in the various schools and academies and colleges of the state, and to improve the methods of teaching by giving information as to improvements that have been brought about in any part of the state. I presume that the battle has been won, so far as the admission of science into the schools as a proper subject for study is concerned, and that now your problem is not so much the broad question as to whether science can be taught, or should be taught, at various stages of the student's career, but it is rather the more specific question of what should be taught and how it should be taught. I think that the importance of the knowledge of how to do a thing is very well illustrated by an anecdote that may be familiar to many of you. I remember reading of a manufacturer in New England whose factory was brought to a stop because a certain pump failed to work. His own engineer was unable to mend the pump; and, finally, they sent for some one in the neighborhood who had the reputation of being a clever mechanic. He came and looked at it, walked all around it, asked for a hammer and struck the pump a blow at a certain point, and immediately the pump resumed its normal function. When the manufacturer received the bill he saw that he was charged $25.50; and his first feeling was one of immense indignation. He sat down to write a letter declining to pay such a sum for such a service; but before writing the letter he read the items of the bill, which were as follows:

For fixing pump................................	$ 50
For knowing how................................	25 00

and he immediately sent his check with a letter of thanks and appreciation. Now it is not less important to know how to teach science than it is to know how to fix a pump, and therefore the service which such an association as this can render to the cause of education in this direction alone, not only in New York state but throughout the country, is beyond question.

A college or university president needs to know only two things; one, what he does not know; the other, who knows it. I know, for college of Columbia university is a most fitting place in which to hold our annual meeting for 1898.

As time goes on and this association grows in strength and in numbers, it will have to deal with many problems other than the mere discussion of methods of teaching. It is already seeking to solve some of these through its committee of nine, which has been manfully laboring these two years. Science in the schools is very young, and its condition even now may be called chaotic. There are many striving to teach science in the schools, there are some teaching science well in the schools; and yet one need not go far to find that there is a very great difference of opinion regarding the things to be taught; one need not go far to learn how wofully inadequate is the time allotted to science teaching in the schools as compared with that which is given to the languages and to mathematics; one need not go far to see how inadequate is the equipment with which science teachers have to work.

We have in this association an earnest and determined set of men and women, who love science, who know how to teach science, whose enthusiasm for their fields of work is certainly worthy of the very highest praise. Now the chief purpose of the organization, at least for the next few years, should be the calling together of these kindred spirits so that they may make their enthusiasm and their skill as teachers felt by the public—the pedagogic public first of all, the greater public afterwards, in order that science may have the recognition and the opportunity which it deserves. Elbow room is what we need for science in the schools, and if this association moves on in the direction in which it is now pointing, it will secure room in which we may carry on our work, money for laboratories and for the furnishing of laboratories, time in which to do the work which we all desire to do and are eager, willing and anxious to do.

I can not speak in detail of the many things which we science teachers hope to accomplish through this association. These will come up one after another. This year we seek among other things to get into sympathy with, to gain the cooperation of the science teachers of this section of the state. The Teachers college, by offering us hospitality, has helped to make this possible, and on behalf of the Science teachers association I beg to thank most heartily Pres. Low and those whom he represents.

for admission to college. The college is not only for those who, from an early period, have been specially fitted to enter it; any high school course of adequate scope and content should lead up to the college gates. A second reason is that the college can elevate the standard of teaching in any subject by conditioning students who have been poorly taught in that subject. The question whether zoology may properly be offered for admission to college consequently depends on the answer to the question whether it properly forms part of the secondary school curriculum. Here we must distinguish between the classical schools and the English schools. The classical schools have a program which, established in its main features in medieval times, has only recently, with many misgivings, admitted a single science and this science is doubtless preferably physics or chemistry. The English schools, on the contrary, have room for two or more sciences and here zoology may reasonably hope to find place. The English school program, while it should lead to college, is specially arranged for the future average citizen, the business man, the man of affairs, rather than for the professional scholar or even the intending college student. The question then arises, Is zoology of such importance to the average student as to warrant placing it on the program, rather than some other aspirant for the place? I think it is if appropriately taught. This teaching should include training in analysis and careful observation; it should include also information which shall give insight into those large matters of the origin of human structure and habits which every citizen should know. The appropriate teaching should cultivate moreover that sympathy

> Not with the mean and vulgar works of man,
> But with high objects, with enduring things,
> With life and nature—

which every true naturalist has had awakened in him at some time his life. We often hear from those that decry the study of scie that the proper study of mankind is man, but we believe with Wo worth

> One impulse from the vernal wood
> May teach you more of man,
> Of moral evil and of good
> Than all the sages can.

pace of the crayfish or removing the shell of the clam, additional organs are exposed, without special dissecting apparatus.

There are reasons besides the larger ones I have urged at the beginning, for confining the anatomic study to the external organs. In the time saved from dissection a larger number of types may be taken up. For instance, to the crayfish may be added such other crustacea as a sow-bug and a water flea. The study of the exterior is of great consequence because on it are left the most important records of adaptation to surroundings. It is of special importance to the citizen because it is that which he sees in the park or country. He does not go about with knife and forceps, but if he is interested he will note the form and markings of the elm tree beetle that lights on his coat in the street car and get out of it much mental enjoyment.

The needs of the future citizen should determine the kind of animals to be studied. They should be those which he will be most apt to meet with out of the laboratory. In the interior of our country these will be chiefly land and fresh water animals. The types should be large enough to be studied with the naked eye or with the aid of a hand lens. I do not question that it is an interesting and valuable experience for the future citizen to know something at first hand about microscopic organisms; I should be glad if each one could draw an amoeba or a paramecium. But I think it is more important for a school to be equipped with proper aquaria, charts and books than to have a compound microscope for each student in a laboratory section. A few good microscopes are almost indispensable; but it seems to me that teachers are too often allured by agents of microscopical firms into buying sets of expensive microscopes, microtomes, paraffin baths and other histologic apparatus which are out of place in secondary instruction.

In addition to external anatomy I advocate the study in the laboratory of such activities of living animals as locomotion, response to stimuli, the feeding and repiratory movements. This physiologic study is as important as the morphologic study, as practicable for the schoolroom, as capable of precise observation and record, and to most students more interesting. I advocate simple experiments dealing with normal reactions, and having no element necessary as a preparation for the zoologic work of the colleges It is very useful but as Dr Davenport pointed out, the leadin universities of the country now give general zoology courses i which they deal with the fundamental facts and principles of th science. Such work forms a good introduction to zoology an could not well be omitted by the colleges even if there were an entrance requirement in this subject.

This subject, like most others, must be looked at from bot the college standpoint and that of the secondary school. We o the colleges do not desire the high schools and the grammar school to be little universities and colleges. The extent to which thi mistake has been carried by many well-meaning teachers is ver great. I have heard of a high school where an attempt was mad to introduce journal clubs and seminars and the teacher talked seriously about research work in zoology. Of course his ideas concerning a course in zoology were derived entirely from universit courses and he was not able to adapt himself to the needs of thos whom he was called to teach. We who teach zoology in th college would like to have students prepared for our work, no by exhaustive anatomic study but by a course which will give som breadth of view with regard to the animal kingdom. I have i mind a high school in which the study of types was carried this extreme; in the entire course two animals only were studie two invertebrates, with the idea, as the teacher suggested, of kno ing everything about these animals. In the end the pupils not know everything about these animals any more than the teac or anybody else did. There is no limit to any subject and the thing to do is to make somewhere an artificial ending of the on a certain type and go on to something else. The greater of the time spent in laboratory work is commonly in minut section. Work could be so done, if limited to external morph and to the general physiology of an animal, that it would slipshod and yet a considerable number of animals could be s The future citizen does not want to know merely an eart and a crayfish. There are a great many interesting and pr things to know about many different animals, and he ought some breadth of view with regard to the whole animal kingd that the type of work which has been presented by Dr Davenport and for which I am speaking, is the type which best fits a man for life, and, as we agree, best fits him for college.

But there are other biologic subjects which must be taken into account, and if the secondary school is so limited in time that it can give but a very few weeks to the consideration of biology, I should by all means recommend the study of physiology—not the old type of textbook physiology nor a course requiring an extensive knowledge of anatomy, histology and chemistry, but one between these two in which the pupil shall get some knowledge first of human physiology and second of the laws of health. This is the most useful subject in biology which the future citizen can take up, and if no time is to be had for zoology, I think we ought first to teach physiology as unquestionably the important thing. It is certainly more important to know something of the life and nature and habits of man than of an amoeba or grasshopper.

Arthur E. Hunt—If I had not already been convinced that the scheme which Dr Davenport has outlined of presenting the subject of zoology is in the main the best for secondary schools, I should now be convinced. I would particularly second what he has said concerning the study of the living animal. This very necessary part of the subject of zoology has been sadly neglected. The reason is not far to seek. In many cases teachers are not prepared to take up this part of the subject successfully; then too, the difficulties of presenting it in large classes are not inconsiderable. But I believe these difficulties may be largely overcome and they must be i we are to secure the best results.

But the difficulties that arise on account of the attempt to wo with living material are not the only ones which the teacher zoology in the secondary schools must face. When I began work as a teacher of science, I attempted to answer this questi Can zoology be taught in the secondary schools in such a way to make it a genuine discipline which may be favorably compa with that secured by the teaching of geometry, Latin or physi I found that physics and chemistry had been well taught, zoology and botany were still considered merely information s jects and treated accordingly. Therefore there were no laborat

ogy as applied to the university where I spent some
hours in dissection. Naturally when I went into the
I did exactly as I had done in the university; I had my
ct all the time. I discovered very soon that with chil-
n not work that way at all and felt that the children had
ie life side of nature. After five or six years with chil-
nt back to the higher students and I was very much sur-
find that what I had learned with the children applied to
students. One of my students in the normal school came
id said, "Since I have been studying some living animals,
earned to look at them in a different way. When I went out
s I saw before only the trees, but they mean something more
now." And so I find that both the younger and older
ts get very much more out of their science if they study the
le of it.

ere is another point. Those who are going to teach nature
es in our elementary schools must get a large part of their
ation from the high schools. I find from my work that nine
hers out of 10 think that it means taking things to pieces. If
are going to have any real nature study in the lower grades,
must have this kind of work that Dr Davenport suggests and
cognize it in the scheme.

R. Ellsworth Call—The discussion seems to have taken a
culiar turn, contrasting on the one hand external observation solely
id on the other internal anatomy. I have had some 18 or 20 years'
xperience in teaching these subjects in high schools, and even now
do not know that I am yet in a thoroughly satisfactory state of
nind. I can not exactly agree with the first argument which Dr
avenport advances. Inasmuch as secondary teachers, as a rule,
ave to do with a large proportion of boys and girls who neve
o to a university, it does not matter to them what the universit
ourse may be, or whether it in any sense duplicates the work
ie high school or not. I have had some experience—speaki
ow on the necessity for some knowledge of internal anatom
i studying with pupils the great classes of fresh-water mollu
he student who is studying an object from any of these c
or the first time always points to the *foot*—what it does, h
cts—which fact necessitates the opening of the shell an

several students in the graduate school of Harvard university are doing research work on the study of the activities of these lower animals. There is now one man studying the movements of the slug. Any one who has placed a slug on a board or a glass plate may have noticed that the slug when placed on the horizontal board will move away from the light; when placed on an inclined board will move either up or down. The student is spending a good part of his year in trying to discover what it is which makes the slug sometimes go up and sometimes go down. That I regard as a thoroughly scientific problem.

I would like to say one or two other things in regard to the criticisms made by practical teachers in the high school. First, in regard to the study of types. With Prof. Dodge I believe thoroughly in the study of types. It was merely the anatomic study of types which I objected to, because it takes so much time which to my mind can be better spent in other ways, the other ways being the study of a few more types and their activities; the study of additional types being always with reference to their external parts rather than with reference to their internal structure. Reference has been made to the snail. I would advocate in this case the study of a live snail, in which one sees the essential external parts of the animal fully exposed to view. One learns, for example, very much concerning the mechanism of the tentacles by the act of retraction. Indeed, I think one learns altogether a greater variety of things and learns them in a more important way in the study of the exterior of the living snail than one would learn from a dead snail. It is a complicated machine, so complicated that we do not at the present time thoroughly understand the anatomy of the snail. It is a waste of time for the secondary student to attempt to understand it thoroughly.

In regard to dissection. I am not opposed to dissection except in so far as it takes up the time which might in my judgment be more profitably spent. I believe thoroughly, however, in the dissection of a vertebrate in connection with the study of physiology rather than, perhaps, in connection with the study of zoology. I think it is a very important thing for the student to study the anatomy of a fish or frog in connection with his study of human physiology.

and zoology. It is hoped that these branches may be considered in the near future.

The committee of nine has received the reports of its subcommittees, which it now lays before the association. These reports contain the outlines of a scheme designed to make the study of science in the schools a serious and satisfactory pursuit. The committee invites a full discussion of them, to the end that they may embody as far as possible the views of this association. We offer no novel theories of education and advocate no untried methods of teaching. A practicable scheme for immediate improvements in science teaching can be based only on principles and practices approved by the majority of educators; and we ask the association to recognize and approve these principles and practices in the plans proposed in this report and to authorize an effort to secure their intelligent application to elementary and secondary science teaching.

Three subjects were originally assigned to the committee of nine: 1) the recognition of science in requirements for entrance to college; 2) science courses in the secondary schools; 3) nature study in the elementary schools. We refer to our last report for the preliminary treatment of these subjects, and now proceed to their further discussion.

SCIENCE FOR COLLEGE ENTRANCE

Nature draws no lines to mark the stages of mental progress from the activities of childhood to those of more mature youth; the transition is as continuous as time itself and the rise to higher levels of thought is an unbroken slope. Such should the processes of education be. Elementary, secondary and collegiate are convenient terms to describe stages in education, but the advance from the lowest to the highest should be gradual and continuous. It is generally admitted that science study should be continuous; yet our present courses are lamentably fragmentary. Secondary schools, with few exceptions, are unable to recognize the science teaching in the grades below, and they find their own courses dishonored by the colleges. Such a condition is unphilosophic, besides causing waste and discouragement. The correlation of science courses in the elementary and secondary schools and the colleges is a problem of supreme importance. We believe that th adoption of the scheme of nature study proposed in this rep one, or better two, of the five periods, be devoted to laboratory and field work. That textbook study be supplemented by the use of more advanced works of reference. That the chief stress be placed on the structural and dynamic aspects of the science, rather than on the stratigraphic and paleontologic as is done in the courses which prevail at present. That the colleges of the state be requested to place geology when taught for a year, five periods a week, in a list of sciences which may be offered for entrance to the freshman class.

Botany. The committee on botany holds the opinion that a course in this science should extend through one full year in the secondary schools, and it lays stress on the importance of a judicious selection of subjects and of the observational and experimental methods of study. A complete outline of a year's work in elementary botany is therefore presented.

In constructing this outline the fact was recognized that all schools are not at present prepared to give so long a course in this subject. Accordingly the central topics in each general subject are distinctly indicated, and such schools are advised to select those for an abbreviated course suited to their necessities. By the selection of these central topics from all the general subjects, the true relations, harmonious proportions and logical sequence of the subject-matter of the entire course may be preserved in the abbreviated work. The outline is thus made flexible enough to suit all schools which desire to do as much as possible of the best kind of work in the best way, whether or not for the present they can devote a full year to this science.

In view of the importance of experimental work in botany, and of the difficulties which beset the teacher, the topics given in the outline are accompanied by practical suggestions. Descriptions of the materials to be used are given, together with hints for finding them. Directions for the treatment of materials for the purposes of observation and experiment, with suggestions as to the essential facts to be looked for, are also offered.

The teacher is advised to prepare the pupil for each practical exercise by pointing out to him, before he begins, the special object of the work he is to undertake and by giving him general directions that will enable him to do it intelligently. Each student should train pupils to use their eyes and other senses, and thereby gain definite, exact knowledge, and should develop the powers of observation, thought and expression, the teacher of nature study must give attention to the mental interests of boys and girls, and endeavor to quicken their reverence for nature and appreciation of the beauties of the world of sense. Nature should be a means of training our children, not merely to see, think and tell for themselves, but to appreciate what is most worth seeing, thinking about and expressing.

Furthermore, in nature study in the schools, it is necessary to keep in mind the primary purpose of our public schools, as commonly understood, the instruction of children in the so-called " essentials," reading, writing, geography, arithmetic. We must aim to make nature study helpful in these by relating it to other school work; if simply pushed in as an extra, without relation to other work, it will win but a narrow place in the average school.

In all work in nature study teachers should keep in mind these aims: to awaken in pupils a sympathetic interest in the world about them and through that to interest them in other school work; to help them acquire a definite knowledge, through personal observation, of their immediate physical environment, knowledge which can be made a basis for the study of their larger physical environment—in geography—and for other school work; to develop the powers of observation, thought and expression, combining for that end the work in nature study with language and drawing; and, lastly and above all, to cultivate the higher nature of the child, bringing him into sympathy with the world of life, imparting a better appreciation of the beauty in his surroundings, and leading him through nature to nature's God.

Unless these broader, higher aims are kept in mind, nature study will be deficient in results. If the teacher's aim is to furnish children with facts about nature, she may be satisfied to have them read books and do little real studying. If she keep before her as the great aim, their preparation to see and tell, to observe and describe, she can limit her work to mere dissection or analysis and description. If she thinks also of their higher development, she will study the lif and beauty of the world of sense, help her children to discover th " whys " and " hows," and make nature study an introduction to t best literature which nature has inspired.

We believe that the following topics meet these conditions:

Plant study. Our common shade and forest trees, such as elms, maples, oaks, poplars, birches, pines and spruces

The development of buds, such as those of horse-chestnut, lilac, elder, pussy willow, beech, maple

The germination of seeds, such as bean, pea, morning glory, corn

The formation and dissemination of seeds, such as mallow, dandelion, thistle, burdock, maple and ash.

Any of the above topics can be studied observationally in almost any school, city or country. Bud and seed study are particularly good for primary grades. Trees are suitable for any grade.

Animal study. Our common insects, such as crickets, grasshoppers, caterpillars and butterflies or moths, flies, beetles and bees

Our common birds, such as canary, robin, bluebird, English sparrow, chicken and duck

Our common domestic mammals, such as cat, dog, horse, cow, rabbit.

Insects and birds can be obtained and studied alive even in most city schools. It seems wise to emphasize insect study in early fall, bird study in the spring and the study of common mammals in late fall and in winter.

Elementary physical geography and physics. Common minerals and rocks, such as quartz, feldspar, mica, hornblende, calcite, salt, graphite, and such rocks as sandstone, shale, limestone and granite

The work of geographical agents, such as rain, streams and waves, and the results of their work, soil, valleys and hills

The forms of water, including such topics as evaporation and condensation, water-dust, fog, dew, rain, snow and clouds

Heat: its causes and effects, including such topics as combustion and friction; solid, liquid and gaseous states of bodies; expansion and contraction; conduction, radiation and absorption; lamps, stoves and furnaces; temperature, zones and climate; drafts and winds.

The topics suggested above are particularly helpful in earth study or real geography. They can be studied in late fall, in winter and in early spring, when the conditions are not favorable for much plan or animal study.

Recommendations on topics for study. The subcommittee nature study would therefore recommend:

That the committee of nine and the New York state science teachers association propose the following topics for study in our schools and endeavor to help teachers in working along these lines.

For years or grades one to four

September, October, November

1 Formation, protection and dissemination of seeds
2 Our common insects. Life, habits, life history, general structure

November, December

Our common domestic mammals, cat, dog, rabbit, horse, cow

January, February, March

Forms of water. Evaporation, condensation, water-dust, mist, fog, dew, rain, snow, etc.

March, April, May, June

1 Development of buds and germination of seeds
2 Common birds. Canary, chicken, robin, bluebird
3 Some insect study. Development of cocoons, galls, etc.

For years or grades five to eight

September, October, November

1 Insects. Habits, life history, structure and classification, relation of insects to man
2 Some observation of trees. Preparation for winter, formation of fruit, coloring and falling of leaves, and formation and protection of buds

December, January, February

1 Common minerals and rocks
2 Heat, causes and effects. Changing solids to liquids and liquids to gases, expansion and contraction, combustion, relation to winds, currents, zones and other geographical phenomena

March, April, May, June

1 Our common shade and forest trees
2 Our common birds, life, habits, adaptation, structure, classification, relation to man
3 Work of geographical agents. Rain, streams, waves, soil-making, formation of valleys

John D. Wilson suggests that "work in nature study, as we are considering it, need not be continued beyond the sixth year; and after that should be superseded by the earth sciences, beginning with geography." With this exception the members of the subcommittee are in entire accord in their recommendations.

Plan of work with teachers. The education of most teachers in our public schools has been gained from books and they depend on books, to a large extent, in teaching. Nature study, specially, will show teachers the value of individual observation as a foundation for thought and expression. Most teachers need help in the observation of nature before they can train their pupils to observe. This can be obtained by means of teachers classes, organized for laboratory work, not merely for talks on nature study. These classes can best be conducted by teachers in elementary schools who have gained some knowledge by observation and are familiar with the conditions and needs of such schools or by science teachers in high schools, normal schools or colleges. In general the work can be done best by school principals or by high school science teachers, whose work brings them in contact with teachers and schools. These teachers laboratory classes should be supplemented by field lessons for the study, in natural relations, of seed dissemination, trees, insects and birds. Stereopticon talks to teachers will be helpful. The most advantageous work for teachers is done at summer schools. The conditions there are most favorable for out-of-door work and the collection of material. For the help of persons conducting these classes and for teachers deprived of such instruction, syllabuses should be printed, indicating in some detail topics and methods. These, prepared by competent persons, could often be published in the educational papers and afterwords issued in leaflet form, at slight expense. At slight cost excellent illustrations for the aid of teachers in the study of trees and birds can be provided. The cause of nature study will be advanced by the cooperation of all agencies interested in the promotion of science and nature study and in the training of teachers. The subcommittee would therefore add to its recommendations the following:

Recommendations for helping teachers. That the committee o nine and the State science teachers association advise and assist th organization of teachers classes for observational study, suppl

c Depth, topography and bottom conditions; how determined
d Temperature at surface and at different depths
e Density
f Movements. Waves; cause, form and effects. Tides; cause, changes on coast; and effects. Currents; characteristic, cause, influence on ocean and air temperature. Influence on man

4 The land (physiography)

General considerations

a Its extent in comparison with the ocean
b Its mineral and rock constituents. A few of the more common minerals. A few of the more common rocks
c Rock classification. Stratified, igneous, metamorphic
d Rock characteristics. Strata, joints, folds, anticlines, synclines, faults, dip and strike
e The crust of the earth. Thickness. Internal temperature. Its age

Agencies that have modified its surface

a Atmospheric erosion. Weathering, etc. Transportation. Deposition
b Rivers and river valleys, lakes, waterfalls. Alluvial cover, talus, alluvial plains and deltas. Cycle of river development
c Glaciers. Glacial phenomena. Evidences of past glaciation and past glacial periods
d Standing water. Oceans, lakes and their work and importance
e Elevation and subsidence. Influence on the coast
f Volcanos and volcanic phenomena. Earthquakes. Hot springs and geysers

Forms of the land and their origin

a Continents
b Islands, oceanic and continental. Origin and history. Illustrative examples
c Plains. Origin and life history. Kinds. Instances
d Plateaus. Dissected, mature, etc. Illustrative examples

e Mountains. Young, old, etc. Examples

f Sea shores and shore lines. Effect of elevation; of depression. Changes in form

Laboratory and field work. At least one period a week should be devoted to this work. It is difficult to make, in brief form, any adequate suggestions on this topic, for so much depends on the equipment of the school and on its environment. The teacher should make use of all the material at hand and provide some laboratory work on each of the large divisions of the subject, though naturally most stress should be placed on the air and the land. A laboratory notebook should be carefully kept. The teacher is referred to some of the more available literature for information touching the equipment and use of a laboratory in physical geography. In the state of New York, through the aid of the regents, it is much more easy to obtain a laboratory equipment than in most states. The following papers deal with the topic under consideration.

General papers. Cornish, "Laboratory work in elementary physiography," *Journal of school geography,* 1897, 1 :172-79, 204-9; Davis, "The equipment of a geographical laboratory," *Journal of school geography,* 1898, 2:170-81; Tarr, " Laboratory methods of instruction in geology and physical geography," *Regents bulletin* no. 32, 1895, p. 992-1011; Tarr, " Teachers' outfit in physical geography," *School review,* 1896, 4:161-72, 193-201; " Report of the committee on geography " in the *Report of the committee of* 10, U. S. bureau of education, Washington, 1893.

Meteorology. Jameson, "Some suggestions for teaching elementary meteorology," *Journal of school geography,* 1898, 2:2-9, 56-62, 96-104, 139-46; Ward, " Meteorological observations in schools," *Journal of school geography,* 1897, 1:41-48; *Maps*: Davis, King and Collie, *Report on governmental maps for use in schools,* Henry Holt & Co., 1894; Davis, " Large scale maps as geographical illustrations," *Journal of geology,* 1896, 4:484-513; Davis, " The selection of topographical maps for schools," *Journal of school geography,* 1898, 2:340-45; Davis, "Topographic maps of the United States," *Journal of school geography,* 1897, 1:200-4; Davis, " State map of New York as an aid to the study of geography," *Regents examination bulletin* no.

plasm, since in the studies of protoplasm the root hairs of seedlings are employed for the purpose of showing later how the protoplasm aids the plant in taking up nutrient solutions.

Following (*see* paragraph 81) this study of seedlings several exercises can be devoted to studies of buds, twigs, etc., with excursions for the purpose of oecologic observations of trees and shrubs during the winter or autumn, in whichever of these seasons the work begins. These exercises can be followed by a study of protoplasm in the root hairs of the seedling, and then in the threads of spirogyra as indicated in paragraph 1. The other paragraphs can then be taken up in the order indicated in the outline. But from time to time, as the work progresses, excursions should be made for the purpose of some oecologic observations specially related to the work in hand. Specially is this the case when the study of the flowering plants begins in the spring. As several of the families are studied, excursions can be made for the purpose of observing these plants in their natural habitat, and for studies on pollenation etc. Topics for such studies are indicated under the 3d division of the outline, oecology

Studies of life processes in plants

PROTOPLASM

Protoplasm in a simple alga: spirogyra. The alga spirogyra is found in pools of quiet water, in ditches or in slowly running water of streams. It forms green mats of tangled threads.

1 **Structure of vegetative stage of spirogyra thread.** Mount a few threads of spirogyra in a drop of water on a glass slip, and cover with a cover glass for examination with the microscope. Study the thread; note size, shape, and form of the individual cells; the chlorophyl band; groups of starch grains containing a small round central body, the *pyrenoid.* In each cell note the nucleus near the center; radiating strands of protoplasm, and wall layer of protoplasm.

Tests for protoplasm. Study the reaction of fresh material in each case in treatment with the following reagents, examining under the microscope: iodine (a solution of potassium iodid of iodine), 1% aqueous solution of eosin, alcohol, alcohol followed by a 1% aqueous solution of eosin, glycerine.

the plant lose water in the form of water vapor, which forms by condensation a moisture film, or drops of water later on the inside of the bell jar.

19 Place two potted plants on a scale one on each arm. Cover the pot and soil with a rubber cloth. Cover one of the plants with a bell jar and with weights balance the other arm. After a few hours note the result.

STRUCTURE OF A LEAF

20 Make thin sections of a leaf of ivy, begonia, or other plant and mount in water. Note the epidermal layers; palisade cells; loose parenchyma; intercellular spaces; stomata.

21 Tear a leaf in such a way as to strip off some of the thin epidermis from one side, and mount this in water. Study the form of the epidermal and guard cells of the stomata.

22 Cut off a young calla leaf with a long petiole. Immerse the blade of the leaf in water and blow through the petiole. There is a communication of air through the petiole and leaf in the intercellular spaces and frequently "bubbles of air" will come from th stomata while one is blowing through the petiole.

MOVEMENT OF LIQUIDS IN PLANTS

23 Place the cut ends of leafy shoots of the balsam, gerani corn plant, celery or caladium petiole in a solution of a red (fuchsin is excellent). In a few hours note the result. Cu stem across and note the colored areas. Split some of the ste

STRUCTURE OF THE VASCULAR BUNDLES

24 Make thin cross and longitudinal sections of some of these of others, with a razor, and study the structure of the areas v colored liquid rises. Compare in the different stems. Break o dead corn stalk. Pull out the fibrovascular bundles in long stran

EXCHANGE OF GASES IN PLANTS

25 Place some green alga like spirogyra or vaucheri or brook water, and set in the sunlight. Set a similar in the dark. Compare results. Bubbles of gas ri former, not from the latter. Prepare the same expe f the higher water plants like elodea. In both

extinguished because the peas have consumed some of the oxygen during germination. Lower into the cylinder a small vessel containing fresh lime water. A whitish film and a whitish precipitate are formed. Blow with the breath on some lime water in another vessel. The same film and precipitate appear. This precipitate is calcium carbonate formed by the union of CO_2 with the calcium in the lime water. Therefore the peas in germinating gave off CO_2, and the process is the same as respiration in animals. Baryta water may be used instead of lime water.

34 If a number of opening flower buds are at hand, or a number of growing mushrooms, place them in the bottom of a similar vessel, closing tightly, and make the same tests. Compare the growth of germinated seedlings, some in ordinary air, some in an atmosphere with CO_2 where O is absent. An atmosphere of CO_2 may be obtained by germinating peas as described above. The same vessel may be used after the former experiment is concluded. Place some wet filter paper on the peas, and place the germinated ones on this. Fit up another vessel with a small quantity of water in the bottom, and suspend in this germinated peas like those in the first vessel. They can be suspended on a wire pan covered with wet paper. Cover this vessel as the former, and after 24 hours note the result. Oxygen is necessary for growth.

Note. Respiration should not be confused with transpiration. In transpiration the plant loses water while additional water is supplied by root absorption. In respiration oxygen enters the protoplasm of the plant by osmosis, and oxidation takes place forming CO_2, which then passes off. Respiration should not be confused with the absorption of CO_2 and the giving off of O, which takes place in CO_2 assimilation.

ORGANS FOR ABSORPTION OF LIQUID NUTRIMENT

35 Study root hairs of seedlings; the rhizoids of mosses; liverworts. How do the algae absorb nutriment? How does mucor? Through the surfaces of the plant body bathed with the nutrient substance. Examine the mycelium (spawn) of mushrooms.

36 Make sections of a carnation leaf through a "rust" spot; treat in a strong solution of chloral hydrate for several minutes, wash, and stain wit eosin; trace the mycelium between the cells of the carnation leaf, and th haustoria within the cells. Study the absorbing organs of the dodd (cuscuta).

GROWTH

37 **Region of elongation.** Take seedlings of corn, pea, b pumpkin, or of other plants which have been germinated in of damp cloth or paper. With a fine pointed pen and indi

43 Mount a few threads of a tuft which contains fruit in water for microscopic examination. Study the conjugation threads, connecting tubes, the zygospores, the passage of the protoplasm from one cell through the tube to another.

44 If desired several different species may be studied. Also species of zygnema, mougeotia, and the desmids.

Confervoideae

45 **Vaucheria** (green felt). *V. sessilis.* Select material in fruiting condition, fresh or preserved in formalin. Mount for microscopic examination. Study form of thread, branching, contents; the sexual organs, oogonia with egg in each (oogonium is short branch enlarged and more or less rounded), fertilized egg in oogonium with thick brown wall, called also oospore; antheridia, curved or coiled branches, one or more near oogonium curved, and note frequently several oogonia in groups.

46 **Oedogonium.** Use material fresh or preserved in formalin. Threads unbranched composed of cylindrical cells. Note here and there several cross walls close together appearing like small pans piled one within another, showing vegetative division of oedogonium. Observe oogonia—here and there enlarged cells, some containing fertilized egg with thick brown wall (oospore). Also antheridia—either on the same thread or on different threads, as in some species. Cells short, perhaps more broad than long. In some species dwarf males, short, club-shaped, appear on the oogonia.

47 **Coleochaete.** This is usually quite difficult to obtain, but may be procured from the Ithaca botanical supply co, Ithaca, N. Y. Compare the circular coleochaete (C. scutata) with spirogyra, vaucheria, oedogonium. Other confervoid algas may be studied if desired, as cladophora, drapernaudia, chaetophora, etc.

PHAEOPHYCEAE (brown algae)

48 **Fucus** as an example. *F. vesiculosus.* Employ fresh material from th seashore, or material preserved in formalin or 70% alcohol. Study the for of the plant, noting vesicles; also the numerous conceptacles, usual situated in the flattened lenticular end of the branches.

Prepare sections of the fruiting ends to study the form of the c ceptacles, the oogonia, eggs and antheridia within. Sometimes both an ridia and oogonia are in the same conceptacle, sometimes in different on

RHODOPHYCEAE (red algae)

49 **Gracillaria or rhabdonia.** Have material fresh from the seash preserved as in fucus. Study form of the plant, the projecting cysto Section some of the cystocarps to study the structure and the form

56 **Willow mildew.** Preserve dry. Mount in water. Study the mycelium, and gonidia (borne in chains) in material which shows an abundance of the whitish mildew. Taking leaves which show numerous minute, black specks (fruit bodies) study the fruit bodies or perithecia (perithecium). Mount some in water. Observe first with low power of microscope for outward form, etc. Then crush some by pressure on the cover glass, and study the contents, asci (ascus), and ascospores, with the aid of the high power.

57 **Mushrooms** (*basidiomycetes*). In the winter these may sometimes be found in conservatories or in mushroom cellars. At other seasons they are abundant in the woods and fields. Study the form of the plant, cap (pileus), gills, stem, ring or veil when present, volva when present, the mycelium in the wood or soil. Section one of the gills, mount in water and study the structure of the gill (trama, subhymenium, basidial layer, sterigmata, and basidiospores). Puffballs may be studied if there is time.

Bryophyta

LIVERWORTS (Hepaticae)

Thalloid liverworts

58 **Riccia.** This forms green circular patches, or ribbon like sheets which fork frequently, and grows on muddy soil or floats on the water. Study the form of one or more species obtainable, noting on the under surface the organs for absorption of nutriment. If material is in fruit, section the thallus for the study of the structure of the capsule and the spores.

59 **Marchantia polymorpha.** Collect in damp places along shaded streams or in swamps, or wet ground. Preserve in 2.[illegible] formalin or in 70% alcohol.

Observe the form of the plant, cupules with buds or gemmae, rhizoids. Distinguish the male plants, with stalked circular discs crenate on the margin, the antheridiophores or male receptacl[illegible] Section to study the antheridia (one in each flask-shaped cavity) [illegible] the sperm cells. If material is fresh the spermatozoids are frequently seen. Distinguish the female plants, with larger, umbrella like female receptacles, the archegoniophores.

Make longitudinal section to study the flask-shaped archegonia (fema[illegible] organs) on under side with egg in each at the base. In older specime[illegible] the sporogonium (capsule) may be studied. To study the mature sporogonium, the plants should be collected in summer (June or July). Just [illegible] the capsules are pushing through the curtains on the underside of the fe[illegible] receptacles, the plants may be preserved in formalin. In this condition [illegible] will keep several years for study.

ANGIOSPERMS (inclosed seed plants)

75 **Forms suggested.** Trillium, dentaria, caltha and others. Study stem (in trillium and dentaria a perennial, underground stem, with an upright, annual shoot), leaves (or scales in some cases), flowers, floral envelops forming the two outer whorls, calyx composed of sepals, corolla composed of petals. Compare the floral envelops with the leaves. Observe the spore-bearing members, stamens bearing anther sacs and pollen (microsporangia and microspores), the pistils (carpels) containing ovules (macrosporangia containing macrospores); compare stamens and pistils with leaves.

76 The teacher can here section ovules of different ages to show the embryo-sac (macrospore), the young embryo, and the formation of the seed, seed coats, etc.

Studies of representative families of the higher plants

77 The following topics are suggested for the study of the characters which show the kinships among the higher plants, and the grounds for their union in different families. One or more species may be studied in each family according to convenience or time. If the plants can not be obtained in a fresh condition at the time needed, they may be preserved dry by pressing, and a number of the flowers of each kind should be preserved in formalin. Types of fruit, branching, and of the inflorescence can be studied along with the examination of these forms.

MONOCOTYLEDONS

Topic 1 Monocotyledons with conspicuous petals

Liliaceae: LILY FAMILY

Topic 2 Moncotyledons with flowers on a spadix

Araceae: ARUM FAMILY (palms belong here)

Topic 3 Monocotyledons with a glume subtending the flower

Gramineae: GRASS FAMILY. Cyperaceae: sedge family

DICOTYLEDONS

Topic 4 Dicotyledons with distinct petals, flowers in catkins or ame[illegible] often degenerate

Salicaceae: WILLOW FAMILY. *Cupuliferae:* OAK FAMILY

Topic 5 Dicotyledons with distinct petals, and hypogynous flowers [illegible] in true catkins ried on at any season of the year, since lateral buds and leaf scars indicate positions of leaves. Study the relation of leaves to light.

TWIGS, BUDS ETC.

82 Study growth of woody stems in thickness and length, as in the ash, oak, etc. Study buds. In the spring study opening buds and flowers, to see the arrangement of the leaves and parts of the flower in the bud; the transition from bud scales to leaves.

POLLINATION

83 Study means for the dissemination of pollen and for carrying the pollen to the stigma of the pistil (pollination); wind pollination, self-pollination, insect pollination; cleistogamous flowers.

PLANT COMMUNITIES

84 Study relationships of plants in communities; the kinds associated under certain conditions of soil, moisture, protection, water, temperature, climate, altitude, etc.

85 Association of plants, as in symbiosis in the lichens, indian pipe, etc.

Seasonal changes; the plants of different seasons in the same locality.

86 Struggle for occupation of land. Study plants as factors in retaining newly made land where washed by streams; occupation of deforested areas; reforestation of old lands.

87 Uses of plants in soil formation. Study rock vegetation, lichens, algae, as well as the higher plants; vegetation of moors, and filling of moors.

ZONAL DISTRIBUTION OF PLANTS

88 On margins of streams, lakes, moors, etc., study the relation of different kinds of plants to depths of water and degrees of moisture in the soil. Consider their relation to age of soil or formation; also the arrangement of the plants in distinct zones, and the tension lines between the different zones.

George F. Atkinson
William R. Lennon
Edward S. Burgess
} *Subcommittee on botany*

REPORT ON PHYSICS

The subcommittee on physics begs leave to report as follows: After various consultations and discussions, a provisional list was prepared, printed and 250 copies sent to high schools, academies and seminaries throughout the state. In view of its apparently favorable reception, it would appear desirable to adopt it at least for the present, and as a working basis.

We believe that the work of the subcommittee for next year should be the preparation of a list of references and suggestions to accompany the list.

Hoping that what we have planned, as well as what we have accomplished, will meet the approval of the committee and the association we beg to remain:

Very respectfully yours
William Hallock
Albert L. Arey
I. P. Bishop
L. C. Cooley
} *Subcommittee on physics*

The following list of experiments was designed as a guide to those teachers who are quite at a loss to know what experiments are best adapted to laboratory work, and as a suggestion possibly, to those more favorably situated, who have a wider experience to draw on. It was not intended to fetter the individuality of the thoroughly qualified teacher in the least, but rather to aid those unfortunate teachers who, without experience in laboratory physics, suddenly find it assigned to them to teach. Many good experiments have not been included in the list, though we hope all bad ones are excluded.

The list is intended to furnish more than enough work for the best student in the best laboratories, thus leaving his instructor a considerable amount of latitude in the particular ones chosen. Probably from two thirds to three fourths of the experiments could be done under favorable conditions. The teacher may alter the sequence or association of the individual experiments as may appear best for local circumstances. The committee expect to prepare during the coming year, detailed suggestions concerning the experiments, together with numerous references to many textbooks and manuals. Possibly details as to apparatus will also prove desirable.

Proposed list of experiments for a year of laboratory work

MECHANICS

1 Estimation of tenths in measurements:
  a) measuring a distance shorter than the ruler;
  b) measuring a distance longer than the ruler;
  c) dimensions of a parallelopiped.

2 Measuring areas and volumes:
  a) of regular bodies by dimensions;
  b) of irregular bodies by comparison with the weight of a regular body (Worthington).

Micrometers and calipers to measure diameters of cylinders and spheres.

Levers, principles with meterstick, three-cornered file and weights.

3 Weighing:
  a) with meter stick and file;
  b) with equal beam balance;
  c) on a graduated spring balance;
  d) by substitution of weights on an ungraduated spring.

4 Density of regular solid $\frac{\text{mass}}{\text{volume}}$.

5 Specific gravity of liquids:
  a) tubes communicating above with ⊥;
  b) with bottle;
  c) by loss of weight of a body immersed in water and then in the liquid;
  d) floating rule;
  e) hydrometers;
  f) determining the capacity of a flask.

6 Specific gravity of solids:
  a) of a regular body;
  b) of an irregular body by immersion;
  c) substance lighter than water;
  d) calculating diameter of a wire from its length and specific gravity.

65 Mount some unopened but mature sporangia in water for microscopic examination. Draw glycerine under the cover glass and watch the effect on the sporangia through the microscope.

66 Compare the sensitive fern (onoclea) with one like adiantum. For study of the prothallia of ferns, select some prothallia growing on the soil of pots in the conservatory, or grow some by sowing the spores a month or two or three months in advance on damp earth in greenhouses, or grow under a bell jar in a room not in strong sunlight. Consult a gardener.

67 Study the germination of the spores, from material sowed about a month in advance, to see the formation of the protonemal thread and the rhizoids. Study mature prothallia from the older material. Mount some in water with the under side uppermost; study the rhizoids, the rounded antheridia situated among them, the longer archegonia near the sinus.

68 If the prothallia have not been watered for several days, one is likely to see some of the antheridia burst and the escaping spermatozoids swim around for several minutes. The teacher may section some of the prothallia to show the structure of the antheridia and archegonia; or permanent sections mounted in balsam may be used for demonstrations.

HORSETAILS (equisetineae)

69 **Field horsetail** (equisetum arvense). Material may be preserved dry, and portions of the underground stem and some of the fruiting spikes in formalin. Both fruiting and sterile shoots as well as parts connecting with the underground stem should be collected. Study form of the fertile shoot, markings, the nodes and internodes, the fruiting spike with whorls of shield-shaped spore-bearing leaves (sporophyls), the sporangia, spores and elaters. Study and compare sterile shoot.

CLUB MOSSES (lycopodineae)

70 **Lycopodium clavatum.** It may be preserved dry, or some of the fruiting spikes in 70% alcohol. Study the creeping stem, the roots, the leaves, the upright branches with the fruiting spike at the top. Study the spore-bearing leaves forming the spike, the single sporangium at the base of each, the spores all of one kind. Study, if there is time, other club mosses.

LITTLE CLUB MOSSES (selaginelleae)

71 **Selaginella.** Some of these plants are grown in conservatories. When these can not be had, fresh material may be collected and preserved in for-

zation of medievalism by an evolution, as real as that involved in the progress of life, the present splendid social and civil state has been realized, so by a similar process, no less real and potent, has been consummated a similar progress in both the aim and spirit of education. Account for it as we may, a profound and extensive change has taken place in the educational policy of our country, if not indeed of the world, within the present generation. Elective courses, new subjects, extensive libraries, finely appointed laboratories, with corresponding modifications of methods of instruction as well as subject-matter, all have been realized within this time. And along with these changes has come what, in the minds of not a few, has been appropriately designated as the "science of education"—the new psychology, the new pedagogy, the new point of view, the new ideal, the new spirit. And added to all this, are the growing place and attention devoted to technologic education, boldly proclaimed by educators of renown as contributing a culture not inferior to that of the so-called "liberal education."

The new education draws a sharp and significant distinction between mere information, or even instruction, and education proper. It does not even rest its definition upon the simple etymology of the term. It may seem a bit presumptuous to say that it finds the root of all education in the biologic laws and conditions which environ the plastic mind from birth, through the unfolding years of growth, making it the rational adaptation of the mental propensities to those conditions peculiarly its right in the order of progress, yet such are its grounds. In a recent address on the "Meaning of education," Prof. Nicholas Murray Butler has elaborated a cogent argument along this line, taking his points of departure from the doctrine of evolution, the significance of prolonged human infancy, and the consequent necessity for a corresponding period of graduated adaptation to changing conditions of environment, which he designates under the heads of science, literature, esthetics, institutions, religion. With rational adaptation to these elements of human environment the subject is educated. Without such he lacks that culture demanded alike by reason and nature.

wholly unknown? Has he acquired not only information, but power? The whole field of natural science is available for that kind of training in power-getting which it is the main effort of modern education to supply."—*Educational reform*, p. 323

Similar testimony from widely different sources might be multiplied almost without limit, but it would be a work of supererogation to offer it in this presence.

True, there may linger here and there an isolated and benighted representative of the old who still hugs the obsolescent phantom of traditionalism; true, now and then a voice may break upon the scholastic air in arrogant denunciation of the new, or vehemently defending the divine rights of a " learned aristocracy," or demanding a " trained patriciate." Or it may break in bewailing despondency over the awful sacrilege which has mingled the fumes of the crucible with the odors of the "Attic violet," or it may even grow hysterical over the work of a " noxious, intoxicating gas " which has filtered through the crevices of a " scientific workshop," since it has awakened within mankind some realization of their inalienable rights and powers—theirs both by endowment and conquest—the right to know the truth and be guided by it, let the result be evolution or revolution, " conceived and led by the scientific spirit."

How sadly pathetic the fate which immolates such martyr spirits for sacrifice in a progressive age! Why should they not have been saved all this crucial agony by having had but glimpses of reality through the " magic casements " of some temple of ancient Jove, or learned " truth only about the past," with " calm science, recluse, ascetic, like a nun, not knowing that the world passes, not caring, if the truth but come in answer to her prayers! "

But despite it all, the " zeit-geist " rules quite otherwise, and the consensus of educational thought and practice accepts the modern view, and whether for better or worse, faces the dawn of a new century with an assurance not likely to be easily shaken or diverted, that the " new education " is a fact, vital and dominant!

Assuming this without further argument or emphasis, what of the relation of science to it all? It might seem hardly necessary to prepose serious argument upon this question in the presence of a body of science teachers. But a few statements of fact may not be amiss, stirring up our minds by way of remembrance and at the same time nerving our courage for work yet to be done.

It may not be amiss, for example, that we firmly recall that the so-called scientific spirit is not a new thing in the world, any more than that it must be created *de novo* in the mental life of every child. And as it is native to every normal mind, so it is a heritage from a remote past. And as the renaissance is known in history as the revival of letters, so likewise may the protestant reformation be said to have been, in spirit, at least, a revival of the " scientific method; " and both alike traceable by unmistakable lineage to the realistic and naturalistic spirit of the Greeks, who, more than any other ancient peoples, drew their best cultural inspiration from nature at first hand.

And no history of inductive science can any more ignore the work of Democritus, Archimedes, Aristotle and Galen, than that of Linnaeus and Cuvier, Newton and Laplace. But its emergence from the thraldom of medieval night has been gradual, and not till the opening of the present century did it become sufficiently conscious of its sturdy strength and dare assert itself to effective purpose in the formulation of the " scientific method." It is this *method*, so forcefully designated by Huxley as the " method of common sense," which has practically so revolutionized every phase of material life that the world of today would no more be recognized by that of two generations ago than does the present appreciate that millennial Utopia of *Looking backward.* And what is true along physical and material lines is hardly less true, though perhaps less conspicuous, along social, ethical and intellectual lines.

The insatiable inquisition for truth, and the irresistible assurance that this method only can finally discover it, has become the inspiration of every department of human thought, so that the scientific method has become the working method of every progressive department of human learning. It is this which has turned the mind from torpid introspections and empty speculations over elusive vagaries, to the recognition of the realities of time and sense, the critical study of facts, and the inductive demonstration of the reign of law.

Prof. Jebb, a renowned classicist, with a clear apprehension of the spirit and method of science, and a candor equally conspicuous, has borne testimony to the subject in these words: "The diffusion of that which is specially named science has at the same time spread abroad the only spirit in which any kind of knowledge can be prosecuted to a result of lasting intellectual value."—*Pres. Eliot,* Educational reform.

Wherefore again, for better or worse, the scientific method has become the dominant factor in every phase of modern life, educationally, no less than otherwise. That it has been not only the promoter, but fundamentally the creator, of the new education, is at once the wail of the conservative defender of traditionalism, and the jubilant assurance of the prophet of the new dispensation!

Yet paradoxical as it may seem, the subjects of the method which has thus made possible a new education have had slow and scanty recognition at the hands of those who guarded the approaches to the ark of the educational covenant! The contention of science for a place among educational instruments has, till of late, been a veritable battle. Nor is it yet accorded coordinate value in many institutions, or even allowed elective equivalence as a condition for admission to institutions which have, in theory, granted its intrinsic merit and even sought its promotion.

That this statement is not overdrawn is abundantly shown in some comparatively recent educational movements. How did it come to pass, for example, that in assembling six educational conferences at Columbia university in order to consider the great question of equivalent college entrance requirements, science was practically the only great subject unconsidered? Commenting upon this rather remarkable circumstance, Pres. Eliot has said: "Pres. Low in organizing six conferences on requirements for admission to college in New England and the middle states did not think it worth while to have a seventh conference on science; because the institutions within the territory give so little attention to science as a requirement for admission, and so are divided as to the nature of the requirement. It seems as if the time had come when we should recognize, if not among the prescribed subjects, at least among the electives open to candidates who present themselves for admission to college, history, science, and the modern languages, and should seek a definition of science as a requirement for admission. I regret very much that science was omitted from the recent conferences in New York, because it is one of the secondary school subjects which must need be studied. A rational course in science—rational for the school because it affords a substantial training in observing, recording, reasoning, and rational for the college, because it affords sound preparation for further study in science during the years of college life—is a great desideration."—*Educ. rev.* 11:418

Was this action in reference to the conferences a deliberate slight to science, or simply the expression of a condition which made other action inexpedient? I regret to have to confess that the latter was the more probable motive in determining the case, though to my mind without altogether warranting it. But whatever the occasion, or the motive, the implication involved is unmistakable; as science teachers we have not as yet achieved the full measure of our rights and privileges, nor met in full our obligations along this line. And possibly the dereliction sustains a closer relation to the evident limitations forced on us than we have hitherto realized!

It may not be amiss in this connection to recall attention to the emphatic statements of Pres. Schurman made before this body at its preliminary meeting in Buffalo, in which it was set forth in general that the preparatory work done in science was not of equal educational value with that done in language and mathematics; though softened somewhat by the cordial assurances pledged that whenever such equivalent preparation was assured its recognition on the part of the colleges would not be long delayed; an assurance since abundantly verified at Cornell university.

Science as such is no longer a mendicant. It has done apologizing for its existence, or its presence, anywhere. Having created from the universe veritable "new heavens and new earth," having placed them at the disposal of an applauding generation, whose time and energy it has so conserved that both the opportunity and taste

We have long enough heard the invidious discriminations against the rank of science teaching as contrasted with that of other subjects both as to its matter and method. I have no doubt that in some cases the charge is quite sustained by the facts; but so much the worse for the facts; they remain none the less unpalatable! Nor is the matter improved by the possible element of blame that comes home to us in the reflection that we have possibly shown less concern than our colleagues in other departments, in the pedagogic aspects of our subjects. Have our pedagogic methods been strictly scientific?

May there not be, moreover, the bare possibility of danger in the sense of self-security which we may have cultivated as to the all-sufficiency of science to take care of itself in the schools as elsewhere? But whether we shall discover any such explanation of the facts as may afford adequate extenuation of the fault, or whether we may choose to find some grain of comfort in the reflection that things are not so bad as they once were, it remains a fact that farther improvement is within reach; and the spirit of the times and the conditions under which we live unite in demanding such coordination of these subjects in the last detail of their educational bearings as will not only hush the voice of accusation and confession, but secure the fullest possible advantages attainable thereby.

As before indicated, the present offers no apologies concerning scientific products or methods. They are the inspiring and controlling factors of modern life. If thus in the every-day affairs of the progressive peoples of the world, why not in their education? If the world has ceased to live and think according to the formulas of medievalism why should it continue to educate thus? It will not. The change is already upon us. Scientific education, in which science itself shall be a prime factor, is the demand of the hour and made at the hands of its teachers.

That coordination of science teaching was not absent from the minds of the framers of the constitution of this association, is evident, for in article second occurs this language: "The object of this association shall be the promotion and *coordination* of science teaching . ."

pedagogic significance, and I would not imply its incorrectness in such use, nor the improprieties of such correlation, specially in the lower grades, but that interrelation and dependence of sciences themselves, not only as to matter and method, but as well to their order of sequence.

Why should there not be, for example, such correlations of the various sciences that elementary courses in college science would be no more thought of than would elementary courses in language or mathematics? Why should it be necessary to devote the best part of an entire year, and that too often the junior year, in learning the merest alphabet of botany or chemistry? Why not seek such correlation of subjects common to school and college that an easy transition from the one to the other would be realized? We have, I am convinced, too long fostered the idea of the essential distinctness of these two institutions, which should in fact be but parts of a common system; and it seems to me that our education as such, will never be really scientific till we have so correlated the several curriculums from the kindergarten to the university, that the passage from the one to the other, if not easy, will at least be natural and rational.

I am not unmindful that there exists a certain belief, or impression, in certain quarters, that an essentially different method of treatment is necessary in preparing students in science for college, and in preparing them for simple graduation from the high school; that to the latter class the subject should be rather predominantly informational than experimental; that in a word, the one may be a *textbook* course, while the other must be a laboratory course.

For one, I not only do not share this idea, but hold a radically different one. It seems to me to proceed upon thoroughly unpedagogic, as well as unscientific, assumptions, contrary alike to reason and the spirit of the new education. From my own point of view, and speaking as a biologist, I should contend that, whether preparing the pupil for the college, or for the farm, or for neither, the work, both in matter and method, should be fundamentally one and the same. The end of such training in either case is scientific power, the capacity to direct the faculties upon any problem in a thoroughly scientific way.

In other words, whether for the school, the college, or in its application in the arts; whether it be taught for information, for discipline, or for culture, science must be genuine. We have certainly done with that obsolescent, one term idea, or with that pseudo-science which scintillates or sputters at capricious intervals in sundry test-tubes and bottles, displayed upon the teacher's desk, or in that still worse form which involves neither the one nor the other, but comprises odd anecdotes of dogs, or birds, or ants, which have hardly better foundation in fact than the fables of Esop, and of incomparably less interest, and therefore of less educational value. There may be a degree of value in the knowledge of the fact that the mean annual temperature of the Pacific coast is higher than that of the corresponding latitude of the Atlantic; but if in offering a reason for it the pupil responds, as did a candidate for admission to college in the presence of the speaker, " that the climate of the Pacific coast is warmer, because the sun is always hotter in the afternoon," it may be questioned whether its importance is at all commensurable with the educational perniciousness involved. If there be science instruction at all, let it be *genuine*, i. e., at first hand, and by a method which compels observation, discrimination, reasoning, judgment. If this be not practicable, better direct the time and energy upon other subjects, even though they lack informational value, and train indif ferently, if only they be not immoral!

On this point Prof. Huxley long ago bore testimony in uncertain sense in the following words: " No boy or girl shou leave school without possessing a grasp of the general character science, and without having been disciplined more or less in t methods of all science, so that when turned into the world to ma their own way, they shall be prepared to face scientific problems, n by knowing at once the conditions of every problem, or by bei able at once to solve it; but by being familiar with the general c rent of scientific thought and by being able to apply the method science in a proper way when they have acquainted themselves the conditions of the special problem."

But if it should even prove that in special cases the informat aspects should have fuller consideration in the one case than i other, a variety of ways might be easily devised by the live teacher by which to meet them, such as topics set for library work, or special sessions held for reports, or discussions upon collateral subjects, or if this were not practicable in every case, then an added course for the student preparing for college, which, with the elective system carried into the high school, is certainly practicable and logical.

A correlation such as indicated could only become efficiently operative under some scheme of supervision, or through a consensus of opinion such as that secured by the Columbia conferences. That both are possibilities within the scope of this association, at least in measure, seems to me a not extravagant assumption; for if I am able to read the signs of the times, such is but the logical outcome of present educational movements.

With a rational correlation secured in the work of college and secondary school courses, its extension to the grammar and elementary grades in the form of nature study would culminate in that unification of our educational system which would secure for the whole a definiteness and symmetry, as well as perfection, the lack of which is at present its most serious blemish, which could not but result in an enrichment of educational fruition such as we have hardly guessed hitherto. Without such we shall likely continue much as at present. That we shall by degrees secure better science teaching in the schools no one can reasonably doubt. But it would lack that coordinating spirit and motive which give meaning and value to the scientific method. As intimated before, the whole system, from the elementary school to the university must be organized around a single, great coordinating idea. And just in so far as we fall below such idea, or fail in its practical realization, is our system not only unscientific, but imperfectly educational.

To the possible charge that all this is vague and visionary, it is sufficient to say that it has had abundant application and verification in schools and colleges, east and west. Long ago the Society of naturalists formulated such a correlated scheme of science work and its trial has proved its merit. Again, the report of the committee of 10 is such in fact, and practically attested by an extended adoption. Furthermore the report of our own committee of nine expresses a similar judgment, formulated after extended and varied inquiry and research. If there be lack at any one point it certainly is not in the logical consistency of the ideal, nor as to its entire practicability, but in a center of authoritative coordination, coupled with intelligent cooperation on the part of those most vitally concerned, the colleges and schools. As already intimated, let the colleges express *bona fide* acceptance of the principle involved, then let school principals and boards of education second it in no half-hearted manner, and with science teachers fit for their work, I think no prophet were required to predict a speedy and efficient realization of it in fact.

Let it not be inferred that this appeal is on behalf of mere system for system's sake, nor to the end that the college may better serve the scientific progress of its students, nor yet that boys and girls may be better fitted for the purely practical work of life, worthy as such ideals may be. I would base it upon the still more profound and important consideration, on that which forms the center and foundation of the new education itself, the conviction that in the scientific method, and the spirit which it inculcates, there is the expression of the method of nature, or of the "infinite and eternal energy from which all things proceed," to know which, and to be able to conform thereto, is the chief end not only of education, but of life.

The first president of this association took occasion in the introductory sentence of his annual address to "congratulate the Science teachers of the Empire state" upon the fact of their organization, in the confidence that thereby would be secured the natural results of organized effort.

May I not with equal propriety appropriate something of his congratulatory phraseology as a fitting conclusion to the present address, with this difference, that while his congratulations sprang largely out of faith, albeit a faith that overcomes the world, mine is rather prompted by what has already been realized. This organization seems to have sprung into being at the call of a great opportunity, not to say demand. That it has in some measure at least met the obligations which it confronted there can be no doubt. That it will even more abundantly justify its existence in the work before it is not more doubtful. I venture therefore to "congratulate the

Science teachers of the Empire state" on the achievements already secured, in the attainment of that goodfellowship aimed at in its organization, in the promotion and coordination of science teaching, in the unification of both object and motive, and on the certain conquests in educational progress and reform which lie before it.

Friday morning, December 30

SECTION MEETINGS

Section A. BIOLOGY

ENTRANCE REQUIREMENTS FOR THE UNIVERSITY

In botany and zoology

BY PROF. GEORGE F. ATKINSON, CORNELL UNIVERSITY

The discussion at this round table conference, I presume, does not relate necessarily to a requirement for admission to college, or to certain courses, which the candidate must meet even if he were able to offer an equivalent in other units. I understand that the purpose is to determine the general character and amount of instruction in zoology and botany which would be acceptable whether as an absolute requirement for admission to certain courses or as a unit that can be substituted for some study already required or provided for. I shall dwell on the latter phase of the subject, though making no attempt to restrict the discussion to this feature. However, if this point be satisfactorily settled, it practically disposes of the other phases of the question, inasmuch as each institution can determine for itself whether the unit shall be an absolute or an optional requirement.

It will be instructive to note what is already offered by several universities in the way of admission requirements in the natural sciences. I have had neither time nor opportunity to make a complete examination of the catalogues of institutions offering these subjects; but I have selected 19 colleges representing a wide range of territory in the United States. In enumerating the subjects, mathematics and astronomy are omitted. Physiology is offered in a few cases, but is nearly always based on the subject as given in Martin's *Human body*, or an equivalent textbook, and in some cases this requirement is placed along with the elementary requirements for admission, while the other sciences enumerated are usually placed in the group of advanced admission requirements. The institutions are the following:

University of California (1897-98), physics, chemistry, botany, zoology

University of Chicago (1897-98), chemistry, physics, botany, zoology, general biology

Columbia university in the city of New York (1897-98), physics, chemistry, botany

Cornell university (1898-99), physics, chemistry, geology, botany, zoology

Harvard university (1897-98), physics, chemistry

Johns Hopkins university (1897-98), chemistry, botany

University of Illinois (1897-98), physics, botany, chemistry, zoology

University of Indiana (1897-98), chemistry, physics, zoology, geology, botany

University of Iowa (1896-97)—subjects named in order of preference—physics, botany, chemistry, zoology, geology

University of Michigan (1897-98), physics, botany, chemistry

University of Minnesota (1897-98), physics, botany, zoology

University of Nebraska (1897-98), botany, chemistry, physics

Oberlin college (1897-98), botany

University of Pennsylvania (1897-98), physics

Leland Stanford jr university (1897-98), physics, chemistry, botany, zoology

Syracuse university (1897-98), physical geography, physics, botany

Wellesley college (1897-98), physics, chemistry, zoology

University of Wisconsin (1897-98), physics, botany

Yale university (1896-97), botany

Botany and zoology are offered by eight, University of California, Chicago, Cornell, Illinois, Indiana, Iowa, Minnesota and Leland

Stanford. One, Wellesley college, offers zoology but not botany. Eight offer botany but not zoology, namely, Columbia, Johns Hopkins, Michigan, Nebraska, Oberlin, Syracuse, Wisconsin and Yale. Or, 16 offer botany, 15 physics, 13 chemistry, eight zoology, three geology and one general biology. Oberlin and Yale offer only botany. At Yale Gray's *Lessons* are recommended as a suitable aid in preparing for the examinations; while at Oberlin, Gray's *Lessons*, and in addition Gray's *Manual* for the identification of flowering plants, are recommended. At Johns Hopkins Spalding's *Practical botany*, excluding the microscopic work, and Gray's *Manual* for the identification of species of flowering plants, are recommended. At the University of Iowa not less than two terms in each science are accepted, but one term will be accepted when combined with other subjects. At Syracuse a " full half year " course in plant structure and development is required. At Wisconsin the equivalent of two terms' work is required in anatomy and physiology of plants and the announcement is made that this will be increased in 1898-99 by additional work on the lower plants. At the University of California, University of Chicago, Columbia university, Cornell university, University of Illinois, University of Indiana, University of Michigan, University of Minnesota, University of Nebraska and Leland Stanford jr university, it may be inferred from statements in the registers, the requirement in general should represent a year's work in the school. In a number of cases there is no definite statement to this effect, and the aids suggested might admit the acceptance of less than a full year's work. In some cases the statement is made that the requirement is expected to be the equivalent of a full year's work in the high school with four or five sessions a week, of three fourths to one hour each. In Columbia university the further specification is made that the work is to represent a detailed study of 40 plants. At Cornell university a minute statement covering a page and a half of the register is devoted to describing in detail the character of the study, and giving the names of the plants suggested to form the basis of the work, though other plants illustrating the same sets of conditions would of course be accepted. At Cornell no time element is specified but botany as well as physics, chemistry, geology and zoology is allowed in lieu of advanced mathematics and the study is expected to equal that of advanced mathematics in difficulty and time of preparation, while it is understood to require a full year for preparation. In nearly all the institutions named practical work along the lines of modern methods of science study is required, and in many cases it is explicitly stated that note books containing a record of the observations, approved by the teacher, will be required at the time of examination as evidence that the practical work has been faithfully performed. In Yale and Oberlin the subject may be considered as one of the elementary requirements.

In some cases all entrance requirements represent one or more units, and the student has the option of choosing a certain number of units to present for admission. In other cases the science subjects are included in certain groups of subjects required in full, or one or more may be presented in lieu of Greek or of a modern language, or an option is offered among several science subjects.

This makes a strong showing for a number of institutions in acceptance of the natural sciences either for admission to certain courses or as units in making up the admission requirements in certain entrance groups. It is desirable perhaps, that greater uniformity prevail among the universities in the character and amount of study required for a subject unit, and that the number of science subjects offered be increased in some institutions.

But the important question is, Can the schools meet these requirements, and what can we do to indicate definitely the specific requirement in the way of outlines or synopses of courses? The committee of nine of your association, appointed nearly two years ago and continued last year, has considered the formulating of some plan for the betterment of science teaching in the secondary schools. A year ago the committee was directed by the association to form subcommittees representing various science subjects, and invite cooperation from outside in preparing outlines of courses for study in the schools. I believe the committee has not been successful in preparing such an outline for zoology. The subcommittee on botany has made its report to the chairman of the committee of nine, and this is included in his report presented to the association yesterday

In the preparation of this outline several things were kept in view. 1 Selection of topics that are reasonably within the reach of the schools, that will require some special pieces of apparatus, not very expensive, and will, while not demanding the severe tests of university research, familiarize the schools with modern methods of science study. 2 Provision for a full year's work, that does not overlook the schools where only a half year can at present be devoted to the subject. 3 Arrangement of the subdivisions of the course in such order that the season of the year will not prevent the obtaining of good material, and such introduction of topics as will present the fundamental principles of the science. The subject matter is so arranged that it can be grouped under four general subdivisions: life processes of plants, or physiology; representative plants of the great groups, or general morphology; representative families among the angiosperms for classification, or special morphology; outdoor studies on the mutual and environmental relations of plants, etc., or oecology.

The last subject is not very susceptible of a practical and systematic treatment by the student in a secondary school. The topics here are intended mainly to interest the teacher and pupil in the outdoor relationships of plants. The inability of teacher or school board to control meteorological conditions, together with the necessity of systematizing the periods of most studies, makes it impossible to lay out a feasible, systematic course in oecology for the beginning student of the secondary school which would satisfy the armor-clad notions of the university professor. On suitable occasions when the weather and the school boards will permit, excursions should be made into the surrounding country, or into plant gardens or planted areas, for the purpose of studying seed distribution, adaptation of plants to conditions of the seasons, to variations in the soil and to moisture, the effect of environment on plants, and the effect of plants on environment. The students can find an interest in these things and be benefited by the association with nature without being learned ecologists. What matter if they do see some beauties of nature during these excursions? What harm can follow if they do associate some poetic thought with the environment where they must accompany a study of function, the pupil gains by necessity some knowledge of morphology while studying life processes. Furthermore in this study emphasis is laid on the broader and more general phenomena, like osmosis, absorption, diffusion, turgescence, nutrition, carbonic acid assimilation, respiration, growth, and irritability, rather than the less important and more special phenomena of adaptation. The first lessons are practical studies of protoplasm, since this substance is fundamental not only to the physical phenomena of absorption etc., but to the life processes. The algae, fungi, liverworts, mosses and the higher plants are employed, to show that these processes are fundamental. Incidentally, however, the pupil is becoming acquainted with a number of plants of which probably he has known nothing.

Next comes general morphology, not morphology in the special sense of organography, but morphology in the broadest sense, studies of representative plants of the various groups, with their life history, reproduction and relationship. The groups are taken up in the following order: algae, fungi, liverworts, mosses, ferns and their kind, gymnosperms, angiosperms. It is considered the natural sequence to proceed from the lower and simpler plants to the higher and more complex. Some educators, with a measure of reason, point to the difficulties which are met in beginning the study of representative plants of the different groups at the lower end, i. e. with the lowest and simplest plants, because they are usually entirely unfamiliar to the beginner. The difficulties are met in endeavoring to learn names, form, processes, and classification of a considerable number all at once. These difficulties arise, I believe, not because the plants are entirely unknown, but because too many unknown things are studied at once. The pupil attempts not only to make the acquaintance of the unknown plant, but to study its form, manner of growth, nutrition, reproduction and classification, so that he is bewildered by the large number of new facts not closely related. I have found that it is immaterial at what end of the series the young pupil begins; the difficulty is the same when the lower plants are reached. To obviate this the study of the vegetative life processes is introduced first, and the lower plants as well as the higher are different science subjects are combined. For these reasons I believe that a year's work in botany should stand for a unit of admission, and a year's work in zoology should stand for a unit of admission, and that a half unit in either one, or two half units one from each, should not be accepted for admission; but this would still leave it open to departments in the university or college to give credit for parts of a unit when the student is admitted on other grounds, provided the work is found to cover adequately any part of a course offered in the university.

Prof. A. D. Morrill—The value of training in observational science can best be appreciated by attempting to impart to persons who have studied only language, a little mathematics and textbook science, some understanding of the way in which scientific facts are determined, or to enable them to use the facts which are the fruits of research. Training in natural history observation is needed by those who will enjoy the advantages of the college and university and the larger number who will early devote themselves to earning a living. Without it there can be no perfect comprehension of theories, born of evolution, which are permeating all knowledge and form to so large an extent a basis for correct living. It is not to produce specialists but many sided men and women that we should educate.

The botanists and physiologists have definite plans for their subjects in the high school, and it is hoped that the zoologists will present equally well considered plans in the near future.

Prof. Francis E. Lloyd—It is impossible to discuss fully each point in the able paper of Prof. Atkinson. I would advocate the construction of courses from two points of view, so that the conceptions of teachers of real ability may be met; for as the standard of teaching is raised and teachers of ability take the lead more and more in secondary work, we must give increasing consideration to their points of view.

The value of botany in high school and schools of a similar grade should be emphasized, for the subject leads to many important economic principles. The intelligence of the citizen can be determined very definitely by his attitude toward this instruction.

It is agreed that the work of the course should consist of ough grounding in plant morphology and physiology, embr study of protoplasm, its characteristics and activities, on hand and oecology on the other.

Dr Frank M. McMurry—Several speakers have spoker projected one year course as logical and well arranged. I ask whether its excellence is due to the fact that it is more than courses heretofore presented or is less logical. In the dis on biology for the high school at yesterday's session the olde were to some extent condemned; e. g. Boyer's and Colton's remember, Boyer's book owes its supposed strength partly fact that it begins with the lowest forms of life and moves l upward to the higher, but Prof. Davenport seemed opposed a careful arrangement of matter, suggesting that types be which are closely akin to the interests of the students. He to suggest that progress consists in movement away from th logical order rather than toward it. I would be glad to whether those present agree that we want less of the strictly arrangement rather than more of it in a high school cur in science.

Prof. George F. Atkinson—I do not think we should s the teaching of the fundamental principles of botany, and in first technical studies like forestry. The principles of science come naturally before forestry studies. Some stu trees and of general principles of forestry can be introduce the head of outdoor studies, where the teacher is left to ad work to the conditions of the country which can be reache casions like arbor day also serve to direct the public mind importance of forestry, but real forestry studies can be giv at technical schools established for the purpose. Studies i culture and horticulture have as great a claim on the sec schools as forestry. What the agriculturist and forester wa know how plants grow, how they obtain their food, how the and fundamental life processes in plants are carried on, as to have a general survey of the plant kingdom, for agricul well as forestry is dependent on a knowledge of the lower p well as the higher. Then too in this study of the general pr and laws of plant life and plant relationship, we shall diffe to some extent the methods and aims of study in the sec mens and pistils, and know very little about the reproduction of plants. Let us teach as fully as possible, structure, function, reproduction; and those features which bear upon the great principles of life. If we proceed along such lines, I believe that we will find that our students will take greater interest in the work and derive more good from it, than they would from tearing plants to pieces merely to be able to hand in to the teacher the scientific names of a large number of plants.

PHYSIOLOGY IN THE HIGH SCHOOL

BY JAMES E. PEABODY

Printed in New York Teachers magazine v. 1, no. 2, p. 163-70 (F 99).

METHODS OF TEACHING BOTANY IN THE GIRLS HIGH SCHOOL OF NEW YORK CITY (MANHATTAN)

BY MISS IDELETTE CARPENTER

Printed in New York teachers magazine v. 1, no. 3, p. 205-11 (Mr 99).

Section B. EARTH SCIENCE

ABSTRACT

Prof. R. E. Dodge introduced the discussion of the subject, “What should be taught in a one year course in physical geography in the first or second year of the high school, and how it should be taught,” by presenting the part of the report of the subcommittee of the committee of nine which refers to this matter. He thus defined the standpoint of the committee. A course in physical geography should include a study of the more important features of the earth, water and air environments of man, separately and in their relations, particularly as influencing the distribution, habits and customs of man and affecting other forms of life. The greatest stress and time should be given to the study of the land, man's most important environment. The question whether physiography or physical geography should be used as a title is not worth fighting over, though the committee prefers the latter term. The interest and disciplinary value of the subject can be assumed without argument. Such a course as is planned can be pursued successfully without any previous study of science, though it would be well that a course in physics should precede. Pure astronomy, biology and mineralogy should not be included, and there should be no attempt to teach completely meteorology, oceanography, or “geo-morphology.”

The work should be logical and progressive, a unit in aim, and cause and effect should be key words. The aims of such a course are to give a knowledge of the earth forms, their origin, classification, and relation to life, together with the influence of climate, and the oceans; to train in scientific thinking and spirit; to impart culture and practical knowledge, not to train scientists.

The committee recommends that in New York state the study be pursued in the first or second year of the high school, occupying at least three hours a week for a year, at least one hour being devoted to laboratory and field work. The order of subjects to be considered is immaterial, provided the plan be logical and scientific. The laboratory and field work should be devoted to simple problems, comprising more than a mere explanation of previous lectures or talks. The accompanying plan should be used as a basis of discussion. The committee is of the opinion that such work can be carried on with simple equipment, that is not very expensive, and that New York state is an unusually fine center for field work.

[For a statement of the exact subjects that the committee desires to see included in such a course, see the report of the subcommittee on earth science to the committee of nine, p. 494.]

The second paper was presented by **Ezra W. Sampson**, teacher of physiography in the mixed high school, New York city, who devoted his attention particularly to what can be done in laboratory, field and textbook work. Mr Sampson introduced his remarks by a statement of the equipment of the New York city high schools for this work, followed by a list of field excursions about New York that he has found very helpful; and then offered the following plan:

Formal textbook work

1) Earth as a planet; 2) the atmosphere; 3) the sea; 4) the land; 5) weather and climate; 6) distribution of life.

Earth as a planet. 1) Solar system; 2) form and size; 3) movements; 4) magnetism; 5) mariner's compass; 6) latitude and longitude, maps; 7) internal conditions—hot springs, geysers, volcanos, earthquakes.

The atmosphere. 1) Composition; 2) weight and pressure, barometer; 3) heat of the atmosphere; 4) circulation of the air, before the state association of teachers at Saratoga, in 1892, he said, "It will be observed that the keynote of the whole matter is direct contact with nature, and a diligent study of what she has to teach through the proper use of trained senses. Through these, important vitalized centres, or in Herbartian phrase 'apperceiving masses,' are gradually formed to which all later acquisitions naturally gravitate, like to like. And when we consider how deeply the results of early habits of observation affect all the higher uses of the intellect, and how frequently through their lack, the results of the highest intellectual and spiritual efforts are clouded by doubt or vitiated by error, we can but be surprised that so little definite attention has been given to this *primal* source of knowledge."

Even the children of the country districts, who pass their lives surrounded by the most varied scenes of nature, are as Whittier has said, "blind to the beauty everywhere revealed." No branch of science seems so well fitted to open the eyes of our students to the beauties of nature, or to arouse curiosity to pry into her secrets as physical geography; for does it not bring them in touch with rocks and minerals, show them something of the nature of plants and animals, teach a little of the mystery of the stars and connect all with cords of physical and chemical laws?

As a first year subject in our high school curriculum, physical geography must be regarded as intermediate between ordinary geography and the mother sciences; subsequent to and supplementary to the former, introductory to the latter, a connecting link binding both together. Alexander Bain, of the University of Aberdeen, has said, "The teacher is tempted now and then to bring under the proper or descriptive geography the scientific explanations of physical geography. Any such explanations should be very short and allusory; the two departments should be by no means intermingled." Some teachers would criticize the eminent professor, while many follow his teachings, and the student in ordinary geography takes the physiographic features of the earth as the book describes them, and seeks no explanation. He learns the names of mountains with comparatively little thought of their formation; the direction and flow of rivers and their tributaries with no question as to why the rivers took these courses; and locates cities with no suspicion that nature destined the rise of a people in that particular spot. Now if we confine the study of physical geography to a mere description of the surface of the globe, teaching effects without seeking their causes, we have no right to call the subject science in the true sense of the word, for such instruction is no more scientific than the mere recital of an incident which one has witnessed. So the 19th century teacher aims to make direct and personal observation the very essence of all her work in physical geography, urging the student to seek causes for the effects he sees in nature, using the textbook to verify and correlate what has been observed.

Different localities furnish different subjects for specific study, but the local knowledge which the Germans aptly call " knowledge of the home " is the best key to the wider study of the globe. Suppose in beginning the study of physical geography that the teacher take his pupils to visit a quarry, a sand bank, a beach, or best of all, perhaps, the head stream of some river. Here the brook has cut through the shale, the rocks are breaking off in planes of cleavage, the stream shows evidences of having changed its course. A pothole cut in one place, or markings on certain pebbles show the effects of erosion, while the soil on either bank illustrates the effects of weathering. The teacher easily arouses a little rivalry among his students in collecting specimens, for it seems instinctive in child nature to collect, and the class returns from the excursion with enthusiasm and material enough for many weeks' work. The specimens gathered, supplemented by the laboratory collection give the students a good idea of the composition of the crust and the formation of rocks. As this study is continued, eagerness is aroused in the student, actually to see how water and atmosphere cause the markings on the rocks, crumble and wear them, and then how water arranges the particles in layers. So the first good rainy afternoon let the class don rubbers and mackintoshes and go to some sloping field or nearby roadside drain, and there let nature answer their questions, while they see how whole continents are made and unmade. Watch the water sifting the finer particles from the coarser, dropping the latter immediately, but carrying the former forward. Follow the roadside drain where it enters a pool or pond, and see how it drops the pebbles directly at the entrance, and then the sand, while the mud particles are kept for deposit in the still water. Thus may be demonstrated the method of the formation of of the effects of the atmosphere on the rocks. We shall attempt to find later on possibly the way whole areas of country are modified. We are fortunate in having the sea near us, within five miles, so we have studied the waves of the shore, their destructive action and their constructive action. As to tides, we have simply learned that there are such things as tides and currents, and we give no laboratory work. Volcanos are studied by models, and some idea of a volcanic mountain as distinguished from an ordinary uplift is obtained. The object of the entire course is to introduce the boy and girl to some of the common phenomena. We have nothing of the biologic side.

R. H. Cornish mentioned the need of simple problems and equipment in laboratory work, and the difficulty of having valuable field work in a large city.

Sup't J. I. Gorton declared the necessity of bringing out the influence of physical features on life, and gave his experience in the attempt to teach too much physical geography in elementary schools.

Philip Emerson spoke of the work done at Wellesley college by Elizabeth F. Fisher in bringing out the relations between physical geography and life.

No formal motions were passed by the earth science section, although the feeling was strong that the committee should be continued, and give its attention to relating the high school course to the elementary schools and to the colleges. There was practical accord touching the advisability of such a course as was recommended in the subcommittee's report.

Section C. NATURE STUDY

CHARLES B. SCOTT, OSWEGO STATE NORMAL SCHOOL

The chairman of the section arranged for the discussion of three topics: the aims in nature study; the material for study; the ways of helping teachers. Prin. George H. Walden was chosen to open the discussion with a paper, "The higher aims: to bring the child into sympathy with nature." Prin. Walden was prevented by sickness from being present. In his absence Miss Alice Cynthia King opened the discussion with a paper, "The subordinate aim: to aid in other school work."

Mrs N. DeG. Doubleday (" Neltje Blanchan ") had been selected to present the claims of "Bird study " as one attractive and promising phase of nature study. A misunderstanding as to the place of meeting delayed her till near the close of the meeting, when it was too late for her paper to be read. It is included in the report of proceedings of the meeting. Prof. J. H. Comstock presented the claims and value of " Insect study," Charles B. Scott discussed " Plant study," and Prin. Anna J. Stone told of work in " Earth study " which she and her pupils had carried on.

After an intermission for the examination of books and illustrations which had proven helpful in nature study and of nature study papers and drawings from the Oswego normal school and from schools in Syracuse and Utica, Prof. Wilbur S. Jackman considered the value of nature study as an end rather than a means, or mere aid in other school work.

As phases of the third part of the discussion on " Ways of helping teachers," Dr Clifton F. Hodge spoke on the " Relation of teacher and pupil in nature study," Mary F. Rogers told something about " Nature study at the teachers institutes " and read, in the absence of the author, a paper on " Teachers leaflets and other work of the bureau of nature study " by John W. Spencer. Charles B. Scott closed the discussion with a paper, " How the science teachers of the state can help teachers." The attendance at the section meeting was about one hundred.

Abstracts of the papers presented are given below.

HIGHER AIM: TO BRING THE CHILD INTO SYMPATHY WITH NATURE

BY PRIN. GEORGE H. WALDEN, SCHOOL 10, ROCHESTER

Nature study, as it is rapidly coming to be understood, is such a combination of science and art that it offers a common field in which all teachers may work together.

When a young lad I was deeply impressed with the reply an Indian chief was said to have made to some public official who offered him a chair. "The earth is my mother," said this child of nature, "and I will recline on her bosom." This poetical expression of a most beautiful thought is the text of my plea for the higher aim of nature study. I do not believe that children are born scientists. This fallacy has had much to do with the wrong methods of nature study and nature teaching. Children are too emotional to be scientific, and too capricious to be thorough investigators. Like that forest child, they are poetic, highly imaginative; and when they have full liberty in favorable surroundings, they learn a great deal that is true in a way natural to them; but above all they learn to love nature.

In one who in childhood, had few companions of his own kind, and who, like Whittier's "barefoot boy," came directly under the tuition of Nature herself, the usual, dry nature teaching of our elementary schools touches no familiar or responsive chord. Such a one may not be, and probably is not a scientist. In his observations of nature he has few of the habits of mind peculiar to the naturalist; yet he is familiar with natural phenomena without inquiring too deeply into the causes, and what seems to me more essential, he has a love for nature—all nature—which scientific learning can not supply.

Is not this the higher aim of nature study? Does any one believe that science lessons will generally create this love, or that science will suffer if methods are resorted to which will cause all to love nature? If love of nature is our ultimate aim in the elementary schools, if we would have mother earth and all her children in loving embrace, we must give careful consideration to the methods of instruction. Method of nature study is not a part of my subject today; yet in discussing aim, I may properly note some principles which the framer of methods must take into account, if the *higher aim* is to be realized.

1 Introduce the subjects from the standpoint of the child instead of the teacher's. Here we find two very different view-points; yet the initial step, to be successful, must proceed from the child's interests. Let me illustrate from some subject which has been worked out more fully. Music and drawing have both had a history in this country somewhat similar to that which nature study *is*

now going through. Till the higher general aim—love of music and of art—became the guiding star of all elementary teaching, the same problems had to be met that we are here trying to solve. The conditions are analogous. Does any one now contend that the aim of music and drawing in our elementary schools is to create *prima donnas* and artists? Yet there are plenty of them; and so there will be of naturalists, enough to do the world's work.

2 Study without a voluntary motive is not likely to lead to a love of the subject. The study of Christian theology would hardly be expected to make men Christians, or of ethics to make men moral. The Christian worker knows that the souls he is trying to convert will make no response to any formal appeal to the intellect. The heart must first be reached. So with the teacher in nature work. If the heart is first right, the intellectual part becomes a mere matter of detail.

3 The teacher's soul must be as responsive to nature as she would have the hearts of her pupils to be. Without doubt, too little knowledge on the part of teachers is a great hindrance to their work; but I can conceive of too much unless the greater knowledge is accompanied by the greater love.

It remains for me to speak briefly of the importance of this higher aim of nature study. Love of nature tends almost universally to place us in harmony with our environment—it makes us free. It enriches life by increasing our capacity of love. Our love of man will be more embracing, and of God more intense. It becomes the foundation of all true art. It stimulates activity in science by arousing latent talent and thus it indirectly contributes to the material progress of mankind.

VALUE OF NATURE STUDY AS A BASIS FOR OTHER SCHOOL WORK

BY PRIN. ALICE CYNTHIA KING, TEACHERS TRAINING SCHOOL, UTICA

We shall generally agree that nature study has a value to the child equal to that of any other school work in its power to ennoble character and impart happiness. Its higher aim would be sufficient reason for adding it to our school curriculum. But we find also that its value as an aid in other school work, if there were no higher aim, would make it worth while.

If a teacher arouses the interest of her children for 10 minutes each day in something good, she not only gains for herself and them the 10 minutes, but she gives the stimulus to other interest and attention all the day long. Nature study arouses that interest. With the possible exception of the story period, our children love the nature lesson best. Within the last two months several grades have written letters to me about their work, choosing their topics. Some wrote about number work, some history, but the great majority told what they were doing in nature lessons.

Besides gaining this interest, the children learn to see and think and write in an orderly, connected manner. In studying a plant they will observe and record all they can learn of the roots, the stem, the leaves, the blossoms and the fruit, each time observing all of one part before beginning another.

Through the use of the senses and interpretation of what is learned the child obtains material for the exercise of the reasoning powers—learns to ask " why " and to find for himself the answer—learns to say " because," thus rising to independence of thought and self-reliance. All these—interest, attention, systematic thinking, self-reliance—are direct aids in all school work. I will mention a few of the special studies which nature study aids, such only as I can illustrate concretely.

1 *Primary reading* can be based on the nature lesson of the day with excellent results. The nature lesson can be followed by a lesson in word recognition, after the children can *read* sentences from the board based on the morning lesson. The following may serve as a typical lesson. The children talked of the rabbit's food and manner of eating. Their reading lesson was from the board follows:

I saw our rabbits eat.
The rabbits eat cabbage.
They like apples too.
Do you like apples?
I take apples with my hands.
The rabbit takes them with his mouth.
The rabbit lives in the woods.
In the woods they eat little leaves.

Such a lesson represents the children's observation and thought, and they do in reality gain thought from the written symbols. Often in connection with nature study some bit of good literature may be read or learned, e. g. the last stanza of Holmes's "Chambered nautilus" when studying snails; or, in connection with bird study, children are delighted with this gem from Lowell:

> The little bird sits by his nest in the sun,
> Atilt like a blossom among the leaves,
> And lets his illumined being o'errun
> With the deluge of summer it receives.
> *He* sings to the wide world
> And *she* to her nest.
> In the nice ear of Nature
> Which song is the best?

Language is the expression of thought. The first requisite then is *thought*. The advantage of nature work as a basis for language is this, the thought in nature lessons is a result of the child's experiences, therefore is definite and *his own*. The value of nature study to geography is evident. Only through becoming acquainted with the animals and plants in their own environment are children enabled to imagine anything at a distance. Through the corn in their school yard gardens they comprehend the great corn fields of Iowa. In lessons on soil they see the decaying leaves, tree trunks, etc., which make the rich, fertile soil of the woods, and so understand one of the conditions of vegetable growth. Study of limestones, sandstones, of the wearing away of stones by water leads directly to a fuller comprehension of geography. Nature lessons are of value in other school work, but they seem to me most helpful in reading, language, geography. If we can through study of nature lead our children to do better work in these subjects—lead through interest to a happier attitude toward all school work—the result will repay the effort.

BIRD STUDY

BY MRS N. DEG. DOUBLEDAY (" NELTJE BLANCHAN ")

There are three points of view from which we may profitably look at bird study—that of the bird, of the teacher, and of the child. Let us briefly consider them with the order of their importance reversed.

Our grandfathers found this "a happy hunting ground" indeed, a sportsman's paradise. It was stipulated in contracts between apprentices and their masters in New England that the former should not be fed on heath hen—the eastern counterpart of the prairie chicken—oftener than twice a week, for the bird was disgustingly cheap because so abundant; but fewer than 50 of these luscious game birds survive today on the island of Marthas Vineyard. Its western prototype has already disappeared forever from several states where once every farmer's boy used it for a target. The wild turkey is fast approaching extinction. Every old sportsman can remember the flights of ducks that once came pouring out of the north in autumn like mighty rivers, actually darkening the country as they passed overhead. Exquisitely graceful terns, that constituted a volunteer beach cleaning and sanitary department, darted and skimmed off our coasts in enormous numbers, but women's hats and rubbish heaps contain most of their carcasses today—a pitiful remnant of the beautiful birds being at last protected by a paid keeper on an island off Massachusetts. Every one knows the tragic fate of the white egret that in certain regions once buried the verdure of the fields as if under heaps of snow. Who can possibly estimate the vast numbers of small song birds that have been stoned to death, or whose nests have been robbed by the small boy, or whose wings, if not their entire bodies, have been worn by the small boy's big sisters, cousins and aunts? Scarlet tanagers were once as abundant as robins in New York state. In Audubon's day flocks of wild pigeons estimated at several millions were a common sight; and so late as the centennial year one business firm captured over a million pigeons in nets spread over a single nesting colony, but because the Chicago market was so glutted with pigeons that it did not pay to transport them, many barrels of them were fed to hogs. Had bird study been introduced into the schools of the United States 50 years ago, these crimes against nature would never have been perpetrated. That they were committed indicates that we are still an undeveloped people. It rests with the rising generation whether our birds shall continue to decrease, or by protection reinforced by unstrained mercy, regain their lost numbers wherever possible. It is not possible for several of our choicest species.

Unhappily I am not a teacher, and perhaps I do not see correctly from a teacher's point of view, but I imagine that a study which can be relied on not only to interest a pupil, but to arouse him, to train his eyes to quick, accurate observations, his ears to catch the most delicate variations of sound, his mind to reach logical conclusions by reasoning as swift and often as subtle as Sherlock Holmes's; to lead his attention into a healthful, stimulating, even inspiring activity after school hours, makes a strong appeal to him. Let the skeptical teacher who gives a lesson in complex fractions one period, try bird study the next. Get out some pictures that show the birds in their natural colors, if possible, a well mounted specimen or two, possibly a nest or egg, a simply written, scientific yet entertaining bird book, and some quotations from John Burroughs, Thoreau or the poets. Have a familiar talk with the children about the bird chosen for study; note the long slender bill for extracting worms from the ground if it is a robin, or the blunt, heavy bill which the grosbeak, cardinal and other seed-eaters use to crack the hard kernels. See if the boys and girls can judge from the shape of the bird's wing and body whether it travels by short passages or long, sustained flights; or tell by its coloring whether to look for it among the foliage, as in the case of the greenish vireos, on the ground, as in the case of the dusty sparrow tribe, high up in the trees where the tanagers and the orioles hope to keep their bright feathers out of harm's reach, or in the air at twilight when the dusky flycatchers are most actively engaged in their aerial sallies after winged insects. Eager faces, rapid questions, a desire to tell of personal experiences and observations of birds, and sighs of regret instead of relief when the bell sounds and the class is dismissed, indicate more than appears on the surface. Occasional trips with the class to the city park or country woodland, with note books and pencils, help to accomplish results more speedily. Moreover they establish that bond of good fellowship and sympathy which is the basis of all successful teaching. It is only by training that a child observes quickly and exactly. He who notes the white feathers in the tail of the little brown bird flying across the road, correctly names the vesper sparrow; or a peculiar waving flight, punctuated with ripples of song, knows the goldfinch; and he tells the oven-bird, one of the few walkers, by its pretty, mincing steps. A flower you may hold in your hand while you count its stamens under the magnifying glass and carry it home to your botany; but a bird is off like a flash sometimes, and one must make instant note of its peculiarities.

The normal child loves nature as Hiawatha loved it, as a savage, a brother and playfellow of every creature in the woods and fields. Generally he despises the city, longs for the country's freedom, and counts every moment lost spent within doors. Nature study satisfies one of his strongest instincts. It gives him the keenest pleasure—is what he is ever seeking while as yet he can not appreciate the training it affords. The migration of the humming-bird, an atom of feathers in the sky, from New England to Central America, can not but stir the imagination of the dullest child; the fidelity of the phoebe-bird that arrives at last year's nest a fortnight before his mate and welcomes her year after year with touching tenderness must appeal to the lover of romance; the devotion of the plovers to their dead and wounded comrades which they refuse to leave though shot rain around them, and all birds' nesting habits teach self-sacrifice; their means of obtaining food, their self-protection from enemies, make us marvel at their industry and cleverness; their beauty of color, form and motion appeals to the esthetic sense; and ethically they do much for children if they teach them only kindness. It has been said that birds can be successfully studied only with a shot gun. I have never killed a bird or taken an egg from a nest. One collection of stuffed birds or skins in any town is sufficient, and where museums are not accessible, patience, which more than any other virtue bird study teaches, always is. Had the last two generations of American girls been taught to know the birds, they could no more wear them on their heads than they could strangle their pet canaries. Had American boys learned the economic value not only of the game birds they helped to destroy or passively allowed to be killed in season and out of season by fair means and foul, but of the little weed-eating and insectivorous song birds, the wealth of the country would have been inestimably bean, pea, morning glory, corn, pumpkin, and watch the development of roots, stems, leaves, flowers, fruit, continuing the study till the end of the school year. For the study of the root growth, plant some on damp blotting paper under glass.

For bud study, select in March two or three trees or shrubs, such as horse-chestnut, lilac, beech, elm, linden, poplar, currant, note the appearance of plant and buds before development begins, bring twigs into school in jars of water and watch there and outdoors the development of buds and growth of leaves, branches, flowers, fruit, continuing the observations till June. The development of the buds of house plants, such as begonia, and of weeds, such as yellow dock and buttercup, will reveal much about the devices of Mother Nature for protecting her plant children, the way in which the plant goes to work to beautify the world, and the final result in fruit or seeds. It is better to watch and record the development of three or four kinds of buds from March or April to June than to glance at isolated stages in the development of scores of buds.

For tree study, the elm, maple, beech, or evergreen is good. Observe carefully their winter condition, noting form, plan of branching, bark and buds. Keep record, with drawings or sketches, of development of each part, buds, twigs, leaves, flowers, fruit. Read or study related literature and history and impress esthetic value of trees to man. Bring out their utilitarian relations, the making of maple sugar and other uses of the maple, and the process of lumbering, with value of lumber, in connection with study of pine.

Continue the study of the same trees in the fall. Observe carefully their preparation for winter, the coloring and falling of the leaves and the growth and protection of the buds, impressing in the observational work and in the literature the thought of fall as a time, not of death, but of rest and preparation for a larger life. A careful observation of two kinds of trees from March to December will be much better than merely glancing at a score of trees or naming and carefully describing the mere structure or parts of a dozen.

being cut through. We spent the time in breaking open the pebbles and noticing the difference between the fresh and weathered faces. This led to a series of lessons on weather and climate. Our second trip to the cut was to observe the rock layers, depth of soil, subsoil, comparative length of roots, the hight and slopes of the hill itself. Then we had the beautiful psalm, " I will lift up mine eyes unto the hills." This was followed by lessons on the action of heat, water, and frost on the rocks, the wearing away of the soil, change in surface, etc. After the hills came a study of the valleys, the meeting of the slopes at their lower edges, with the brooks winding down between.

In our yard is a small stream that joins the river a few rods away. Our first formal visit here was after a rain when the " crick was up." We did not try to find out why the stream was muddy. The pupils knew already from previous observations. Why is it teachers treat children as if they had no mind or judgment of their own? We talked about erosion, silt, velocity, current, right and left bank, course of stream, and its final destination. The boys wished a big Spanish warship would come up from Cuba, so they might have some fun. When the water subsided, we went out again and built a stone dam. This made an admirable lake with inlet and outlet. Along the bank were numerous peninsulas and islands, all firmly fastened at the bottom. In class we studied the Great lakes and several important islands, continental and oceanic. A neighbor felled a buttonball tree on the edge of our creek, and that night during a storm it floated down stream a hundred feet or more. We commenced lumbering at once and carried on that occupation in a most entertaining manner till all the lumber in the world was exhausted.

We began the study of air with a bicycle pump, then used a lamp to get a current of hot air, and finally floated out on the winds of heaven. During a sharp cold wave one of the boys told me the Eskimos were having a spell of warm weather. I asked him how that could be and he said that all the cold wind from the north pole was blowing toward the south and the hot air from the equator was rushing in to take its place.

What are some of the results of teaching about the earth, the home of man, in this manner? I dare not tell you what I *know* they will be. It will not make *all* the bad boys good, nor all the stupid girls bright. But what a power it bestows on them to see the works of the wise Father in a new light, and read from Nature's book beauties unseen by the uninitiated! Shakspere must have had this power when he wrote:

> Tongues in trees, books in the running brooks,
> Sermons in stones and good in everything.

THE RELATION OF TEACHER AND PUPIL IN NATURE STUDY

BY DR C. F. HODGE, CLARK UNIVERSITY

I believe it is Prof. Scott who has given as a chief reason for introducing nature study into our schools that it "trains teachers to better methods of teaching." If I might be permitted to state the case a little more broadly, I should say that nature furnishes just the material necessary to bring teacher and pupil into natural, mutually helpful relations. I feel deeply that in the unfair treatment of our teachers lies one of the gravest dangers which confront the nature study movement. The point of unfairness consists in the charge, often reiterated, that teachers do not know enough about nature to give instruction about it; and this is made with the insinuation that they should go to work to learn it as they do other things. For the teacher to fill his head with nature lore and compel his pupils to learn it, is the surest way to kill out all love of nature in both teacher and pupil. In demanding any such thing those in authority in educational circles are demanding a grievous impossibility, and thereby defeating their own ends. A teacher would have to be a combination of 10 specialists at least to answer one tenth of the questions which a class of children will ask about the common forms of nature. In order to succeed nature study must remain largely, I am tempted to say wholly, a matter of the heart and the will, of love for nature and the will to do all the good in the world possible. This is all we should require of teachers of nature study in elementary and even high schools; and when we require more, in the way of expert knowledge, we are in grave danger of killing love of nature and thus that her pupils felt that all nature was " layin' fer ye," and one of the commonest questions asked her was, " Teacher, what does them do to ye? " What a pitiful state of things, and not confined to the city!

I am sure that the science teachers of the state can do much to help the teachers of the elementary schools do the right kind of nature work. If there could be more study of things and of life in science courses in high schools, academies and normal schools, to say nothing of the colleges, we should soon begin to feel the effects of it in the lower schools, even to the lowliest of all, the neglected country school.

THE WORK OF THE BUREAU OF NATURE STUDY

BY JOHN W. SPENCER, COLLEGE OF AGRICULTURE, ITHACA, N. Y.

The primary object of leaflets in nature study was to equip the teacher in the rural school to become an investigator, with her pupils, of some of the common things found in country life; for it should be known that the Bureau of nature study is part of a movement for university extension of agricultural knowledge, provided for by an appropriation made by the state of New York, to be administered by the College of agriculture of Cornell university.

This extension work has two divisions—one investigative, taking investigation to the farm of the farmer and assisting him in solving some problem peculiar to his vicinity. The other division is educative. The first step taken in this latter division was in holding itinerant schools in which the why of farm operations was taught more than the how. The next step was the formation of a farmers' reading course on the correspondence or Chautauqua plan. The third step was to do something for the farmers' children that they might be led to see some of the interesting things about them, by trained observation be better qualified for agricultural pursuits, and rural life be changed from one of monotony to one of lively interest.

A few leaflets, as feelers, were issued during the school year of 1896-97. It was not till the school year of 1897-98 that we felt prepared to push our method into the common schools with much force. During the first year the leaflets were very cordially received by the grade of schools having superintendents. At the beginning of the not trained the student to observe. Few of our teachers know how to observe and hence they feel handicapped in work, the essence of which is individual observation. However earnest they may be, however willing, they feel like blind leaders. Perhaps this feeling is intensified by the consciousness that those they lead are usually not as blind as the teachers. The children, particularly in the primary grades, have not so far lost the power of seeing, with which nature endowed them.

Teachers need help and guidance in studying nature, not mere lectures or talks but observational work indoors and out in the streets and fields. Science teachers in high schools or academies, or principals and teachers in the elementary schools, having scientific interests and some training in observation, are the ones who can best help other teachers. They are best fitted to give help because of scientific training and experience as teachers. They are on the ground, in contact with the elementary teachers, most familiar with their needs and capacities. If nature study is to be widely and successfully introduced, it must be through teachers classes, meeting weekly, at least during spring and fall, studying the material which the children in the schools are to study, with occasional field lessons and, when possible, talks, illustrated with stereopticon slides, on such topics as trees, birds, or insects. Mr Scott touched on his own experience in conducting such volunteer classes for the teachers of St Paul, Minn. They were the principal means of introducing nature teaching and engaging in more or less definite systematic nature study 10,000 to 12,000 children in the St Paul schools.

The thought was emphasized that science teachers who did such teaching would find themselves and their high school work greatly benefited. The high school and elementary school would be brought into closer relations, the pupils would come to the high school with greatly increased interest in nature and increased power to see, think and utter, and, perhaps best of all, the science teacher, working with the teachers of children and planning work for children, would be led to think of his pupils more and less exclusively of his subjects, thus becoming more a teacher of real science.

academies, seminaries, etc. in the state. Apparently more were consigned to the waste paper basket than were returned to me, though I fondly hoped that we should receive much valuable criticism.

Inasmuch as we have culled the various experiments from all possible sources, we owe a large debt to those sources, though in consequence we can not say of the list as Touchstone did of Audrey, " An ill-favored thing, sir, but mine own."

[Prof. Hallock then presented the list printed on p. 520-26.]

A STORY OF EXPERIENCE WITH PHYSICS AS A REQUIREMENT FOR ADMISSION TO COLLEGE, WITH CERTAIN PROPOSITIONS

BY PROF. EDWIN H. HALL, HARVARD UNIVERSITY

I have been asked by Mr Arey to write a brief paper giving my " experience with students offering experimental physics as an entrance requirement" for college and my "conclusions concerning the relative disciplinary values of experimental and textbook physics in secondary schools."

My experience with physics as a requirement for admission to college dates from September 1881, when I began my connection with Harvard college by making out a set of questions to be used in the impending examination of candidates for the freshman class. For several years before and after this the examinations were on the basis of textbook work only, and they were entirely written. They had acquired, before I had any responsibility for them, the reputation of being ridiculously easy to pass by cramming, and I have no doubt they deserved it. From the character of the papers and from the statements of the examiners it is plain that the work of examination was conducted on the side of the college in a perfunctory way. I felt at first little enthusiasm for the task, and can remember rejecting and almost resenting the suggestion of a colleague that I should undertake seriously the labor of improving the teaching of physics in schools. It fell to my lot, however, to set all the examination papers in physics and to read all of the candidates' answer papers, or " books," for several years. I did this work conscientiously if not gladly, and believe that the textbook requirement lost by degrees something of its undesirable reputation; but after some years, this requirement still being unsatisfactory, a certain amount of textbook astronomy was added to it, and at the same time an alternative for this combined textbook study was offered in the shape of a laboratory course in physics. Simultaneously a course in chemistry preparatory to college was outlined and established under the special care of the late Prof. Cooke, at that time head of the department of chemistry at Harvard. To him and to Pres. Eliot, who had been a teacher of chemistry, is probably due most of the credit of committing the college to the experiment of these laboratory courses. To them was due also, I suspect, the mistake of projecting the physics course on precisely the same lines as the chemistry course. Each was defined as the performance of a number of experiments with "lectures or other oral explanations in addition to the descriptions given in the laboratory manuals." In each the candidate was "required to pass both a written and a laboratory examination," the written examination "directed to testing the candidate's knowledge of experiments and experimenting as well as his knowledge of the principles and results" of the science, the laboratory examination "directed to testing his skill in experimenting." In short, the emphasis was all on experiments and experimenting, as it should be perhaps in chemistry, but as it should not be in physics. However it may be with the chemist, the physicist must have time to chew the cud. To ignore this, as those did who framed in general terms the original Harvard requirement in elementary experimental physics, is to make a serious mistake. There were other mistakes for which I must bear the main responsibility; crudeness of apparatus at which I now shudder, though we have not attained or aimed at any great precision of measurement, laying out the "method of discovery" farther than the student could follow it, restricting too much the range of options in experiments. In spite of these mistakes and others, and in spite of the difficulty met by teachers in finding money and time for laboratory exercises, the experimental course was successful from the start. It took root and it grew.

is, as I have just shown, a possibility of going too far this direction; but this possibility is no doubt a vanishi quantity for the public school system of any state. There another possibility of mistake, the possibility that a syste instituted by state authority will require the performance strictly prescribed work, nothing more and nothing less th some specific list of exercises. It is necessary for the best resul that the teacher have a certain freedom of choice in his work. N good and experienced teacher likes to be or ought to be told e actly what he is to do. We have been led by experience at Harva to give in the field of laboratory examination a set of exercis much more extensive than that which any one candidate is expect to go through in his preparation. In conclusion I will state cert propositions which I, as chairman of a committee acting in conne tion with a department of the National educational association, ha made to the other members of the committee, in regard to physic in schools which prepare boys for college. These propositions ar as follows:

1 That in public high schools and schools preparatory for college, physics be taught in a course occupying not less than one yea of daily exercises, more than this amount of time to be taken f the work if it is begun earlier than the next to the last year of th school course.

2 That this course of physics include a large amount of individu laboratory work, mainly quantitative, done by the pupil under th careful direction of a competent instructor and recorded by th pupil in a note book.

3 That such laboratory work, including the keeping of the not book and the working out of results from laboratory observation occupy approximately [not more than] one half of the whole tim given to physics by the pupil.

4 That the course include also instruction by textbook and lecture, with qualitative experiments by the instructor, elucidating an enforcing the laboratory work or dealing with matters not touche on in that work, to the end that the pupil may gain not merel

Discussion

Prof. Edward L. Nichols—It seems to be a peculiarity of this discussion that we are all on one side. So far as the consideration of the question has gone among college men and teachers—and the subject has been maturely considered—there seems to be but one opinion, which is, I believe, well expressed by the various committees. The conclusions reached by the committee represented by Prof. Hallock, and the conclusions reached by the committee represented by Prof. Hall, come to the same thing. Both committees report that there is every reason to encourage laboratory work in the secondary school; that there is every reason when this work is done to give it a place in the entrance requirements for college; that it would be a mistake to confine secondary school work in physics simply to laboratory instruction; that it would be a still worse mistake to confine it strictly to learning the text; that so far as it is possible to express the relations between these two parts of the work, it ought to be about equally divided between the two.

Now as regards the question of putting out a list of problems, I confess to a certain degree of shrinking from that proposition, though I admit that it is the nearest way of indicating the sort of thing which we all agree ought to be done and of setting a certain standard. My shrinking from it comes from the feeling which the last speaker has expressed, that the teacher ought to have some responsibility and that his individuality ought not to be sacrificed in any way. One who is dealing with classes of students in a subject like physics ought to be continually striving for new methods of bringing out the things which he wishes to attain, just as every one dealing with literature must continually be striving for new means of expressing what he wants to say. Therefore, while this list is a good thing, and necessary at just this stage of our advancement, it ought not to be too rigidly insisted on. Experiments not on the list but which meet certain local conditions best ought to be cheerfully accepted. It is impracticable to add to the list of experiments till we have included in it everything that anyone who ever taught physics found to be good.

Take for example the training in estimation of tenths. We have a variety of methods in which the estimation of tenths is made familiar to the student. You can train the ear and the brain to work together in a way which I have never seen described in any textbook. I have tried it with gratifying results in the case of very immature and untrained classes. The experiment consists in setting up a seconds pendulum in circuit with a telegraph sounder and Morse recorder. By means of a key in multiple circuit with the pendulum, time signals are made at random by the instructor. The class, with note books in hand, estimate tenths by ear from the nearest seconds signals to each signal from the key. The work at first is puzzling on account of the novelty of the exercise, but in a very short time the members of the class begin to be able to catch the intervals and to note them down. One should continue the exercise for 15 to 20 minutes and then work out the results by having some pupil read the records of the Morse recorder. The members of the class compare the record with the list of time intervals in their note books and make out a table of errors.

I mention this to illustrate the fact that there are methods not given in our list, which are of the greatest use in the school room to train the sense of observation. Every teacher will have occasion to devise experiments that will enable him to use the apparatus at command and will employ methods not on the list, and I think this work ought to be recognized whenever it is good. So I would emphasize what Prof. Hall has said, that the teacher ought to be thrown on his own resources in these matters and not tied down to any list of experiments. At the same time such a list serves a most useful function in indicating what constitutes valuable laboratory practice, in contra-distinction to much which in various quarters in the past has been dubbed laboratory work in physics.

Now as regards the engineer. The entrance requirements for young engineers ought of course, so far as science and mathematics go, to be somewhat more rigorous than those for the general student. I would like to protest against assertions to the effect that imperfect training in science is positively harmful. Is it fair to the intelligence of the students in our schools to imagine that poor teaching ward to the time when the science teachers of the state of New York will get together to talk science; when all these pedagogical questions which are now troubling us and which we are striving to solve will have solved themselves through the work of our various committees and in the ways which I have just attempted to outline. Science in the schools will still need this association for the development of individuality, originality and enthusiasm. Scientific work needs these characteristics just as much as literature. It can not be machine made any more than poetry can. The Science teachers association in the new era of which I speak will be a teachers science association, and its prime function will be to stimulate and keep alive the scientific enthusiasm and fruitfulness of its members.

PROPOSED COURSE OF PHYSICS FOR THE SECOND YEAR OF THE GENERAL AND COMMERCIAL COURSES IN THE HIGH SCHOOLS OF MANHATTAN AND BRONX BOROUGHS, NEW YORK CITY

BY PROF. FRANK ROLLINS, BOYS HIGH SCHOOL, NEW YORK CITY

The specific subject on which I am expected to speak accidentally came to my attention late last evening, but it has been my good fortune for once in my life to be forearmed without being forewarned. It has happened during the last year that the two colleges which are a part of the public educational system of the city of New York have requested from the new high schools in the boroughs of Manhattan and the Bronx a statement as to the work in physics that they would undertake to do with pupils in preparation for college, not necessarily work preparing for the normal or city college, but general college preparatory work; and it fell to my lot to prepare this statement in conjunction with my colleagues—who have contributed much of whatever balance or symmetry it may possess—and to put the official report in shape and forward it to these colleges. It happened to be precisely what you have called for in the program and I can not do better, I think, than simply and briefly to state what we will undertake to do.

Exercise 1 Proper use of instruments in weighing and measuring, illustrated by determining the density of a rectangular block of wood.

those principles. Many collateral experiments, not mentioned here, will be performed by the teacher and used as a basis for questioning. Finally many problems will be set for the pupil to solve, involving the principles of both laboratory and lecture table exercises, and the discussion of some good textbook will be carefully studied after the pupil has completed his notes on a given exercise, or group of exercises.

The writer realizes how meager and fragmentary this outline is, and how much valuable material has been omitted. The time allotted to his department by the authors of the curriculum is four periods of about 40 minutes each a week for one school year, and even that is granted with the condition that for one of these periods no prepared work shall be required. It is easy for any teacher of physics to see that the time assigned is insufficient for any well rounded course in the subject. The struggle in preparing the above outline has hardly been for a survival of the fittest, but rather for a retaining of the absolutely indispensable. It would have been easier and more satisfactory to prepare a much longer course.

I would like as a representative of the association of physics teachers to express again in this part of the country the very high estimation in which that association has held the work of Prof. Hall of Harvard university in building up and developing laboratory physics. Indeed, we regard the work of the university in general and of Prof. Hall in particular with a high degree of respect, I might say almost with veneration, which, when Prof. Hall requested two or three years ago that we make some specific recommendations, prevented us from complying. We did not think it proper to presume to make specific recommendations; and I have no doubt that our attitude in that matter must have made us seem to Prof. Hall like "children crying in the night," "and with no language but a cry." However, we managed to make two general recommendations, one of which, we are very glad to acknowledge, has been met. The recommendations were as follows:

1 We requested that the number of experiments which might be used in preparation for Harvard college be somewhat enlarged.

of insects and various other objects of more or less interest. There have been schools in which the examination of such objects as these constituted the work done with the microscope. There was, however, no method in the work, no study of related facts. The microscope was used merely to excite wonder in the child's mind. Such is not the prime function of the microscope in the secondary school.

The acceptance of the cell theory, and the recognition of the evolution of life from small unicellular organisms simple in structure and function, but not observable to the eye unless magnified, through a series of organisms of constantly increasing complexity of structure and differentiation of function, organisms visible yet made up of minute cells, have broadened the subject-matter of the sciences of life. This subject-matter is gradually finding its way into the textbooks used in our schools and teachers are learning that it can not be fully explained by words alone. They can tell their pupils about the cell and about the complexity of organs composed of numerous cells, but without the aid of the compound microscope they can not demonstrate objectively the structure of the unit of physical organization, the single cell. The prime function of the microscope, then, in the high school is to enable the pupil to study the phenomena of unicellular organisms.

I am aware that there are those who insist that the pupil should use his eyes unaided as much as possible; that, when he has learned to observe well with the eyes alone, he should use a common lens, followed by the use of the lower powers of the microscope, and finally by the use of the higher powers. This is undoubtedly true in the study of the structure of some objects, as gross tissues of animals or plants, but for the pupil beginning the study of zoology or botany with the idea of examining the fundamental structure of animals or plants and considering their gradual evolution from lower to higher forms, from simple to more complex organization, this plan does not seem feasible.

As few schools in our state possess more than a single compound microscope, in this paper it will not be supposed that each school is so fully equipped that there is a microscope for every two or three pupils; the attempt will be to portray a possible phase of the use of of cells as seen in heavier leaves. By this time the pupil will grasp the idea that a whole plant is made up of individual cells. However much the pupil may afterward examine pollen grains and various prepared tissues, this preliminary work should and can be done in a class of good size even with a single microscope. If this work is done the pupil comes to understand the form, structure and function of plants in their simplest manifestations, and thus is enabled to understand the complexity of higher forms more easily and more completely.

In physiology as in zoology and botany the first use of the microscope should be in the study of a single cell. The amoeba is for this purpose probably the best object for study. Here is an animal without stomach, heart, arteries, veins, lungs or brain, and yet it performs all the functions necessary for life, it assimilates food, grows and multiplies. After the pupil has studied this the teacher can easily explain how each part of the human body is composed of a multitude of living beings called cells, each of which eats and grows like an amoeba, one collection of cells forming muscular tissue, another osseous tissue, etc. These various kinds of tissue can easily be examined if the school has provided the mounts. The teacher should also provide for the examination of blood corpuscles, in which the pupils always take great interest.

An experiment entirely practicable with only a single microscope is the examination of the circulation of blood in the web of a frog's foot. The teacher should secure the frog before cold weather and keep it in some place available for use.

Of course much more than has been suggested in this paper is desirable, but it seems wise to endeavor to influence teachers to do what is possible with the present equipment in the secondary schools of our state rather than to advise an ideal course which would require a full equipment.

A few years ago a microscope was rarely found in the secondary schools of this state. Today nearly every school has at least one instrument and several schools are contemplating the purchase of more. With the gradual introduction of better qualified science teachers into our schools the efficiency of the microscope for educational purposes will be more fully recognized and its introduction will be more complete.

The educational value of the telescope is universally recognized, but its great expense will always prevent its liberal introduction into our schools. With the microscope, however, the case is different. Comparatively inexpensive, it is destined to become a large factor in the educational progress of the future, and one of the duties of this society should be to encourage and foster its use.

Discussion

Prin. Edward S. Babcock—The paper which we have heard indicates clearly the objects to be obtained by the use of the microscope in secondary schools. The chief object is to obtain a conception of the anatomy and physiology of the smaller plants and animals and their relation to the higher and more complex organisms. I most heartily agree with this paper. In the introduction several interesting subjects were mentioned as being of small value. There are things which the beginner will always see under the microscope when examining an object other than those which we wish him to see, such as bubbles of air, hairs, dust, etc. It seems to me that, in the beginning of the work, it would be a good plan for the student to study at least a few of these objects so that he may be able to recognize them when they incidentally occur on the slide. As the paper has stated, it is almost impossible to give any correct idea of the fundamental structure of plants and animals without the use of a compound microscope, and this is specially true in zoology and physiology. An excellent thought was expressed when it was said that one microscope can be made to do good service in a school. It is unnecessary in most of our high schools to have more than one, though it would be advantageous to have more. I have found in my own experience that this method works very well. A class can pass, one student at a time, to the microscope and view the specimen which has been prepared. In addition to this students take a great interest in preparing a few simple slides for themselves. In the study of physiology the working up from cells to tissues will be of great use. Few students studying physiology have a fair conception liver. I am not sure that the amateur will be successful. The hardening process is difficult, but if the specimen is cut up into small pieces and placed in any good hardening solution for several days, it will be hard enough to cut into sections.

Prof. Charles W. Dodge –I would like to declare my hearty appreciation of the ideas which Mr Clement has expressed this afternoon, and I wish they could be in operation in a greater number of schools. I think if the regents office were to be a little more vigorous in this matter, we could easily have more of the study of the minute structure, not only of the lowest animals and plants, but of the higher animals and plants as well, in the secondary schools. I have only one criticism and that has regard to the assertion that a pupil should be informed before he looks into the microscope as to what he is going to see, and a drawing of the object under the microscope be shown. I think the proper way is to let the pupil get his first idea from the real thing, not from some other person's idea expressed in a drawing or description. He may then correct his idea and be led to a further study by means of drawings or descriptions.

Mr Clement told us what we should do, but did not have time to tell us how to do it. There is no reason to suppose that a person who has had only general scientific training is competent to prepare a well-mounted specimen for the microscope, for the preparation of slides for microscopic observation is by no means child's play and the mounting of such specimens is an art in itself. When one comes to study the structure of organs like liver, kidney and brain, then I see no other way than to purchase from some dealer specimens prepared by persons who have had experience in the work. But as for cutting a section of a liver or kidney with an ordinary sharp knife and then expecting to see anything definite, it is absolutely impossible. I remember the story of a teacher of botany in one of the central towns of this state who read in the book that, if she wished to show starch grains or cells, she should take a sharp knife and cut a section of a potato. One of the pupils who saw the section said that it was suitable in size for making Saratoga chips.

When it comes to the manipulation required for mounting permanent specimens, we would better leave it to some one who knows how. Each tissue requires special treatment by itself. For information we must simply go to the treatises on histology. Many of these will tell us about the simpler kinds of work. As for telling any teacher of science what this or that detail of structure means for a certain section of tissue, it can not be done in advance. It may be a normal feature or an injury which has occurred through manipulation of the specimen, or it may be due to various causes, and the proper explanation can be given only by some one trained in that line of work.

My contention is that nothing but prolonged and serious study under proper supervision will prepare a person to teach zoology or microscopic anatomy or any other branch of science. These subjects require properly trained teachers just as much as do the languages and mathematics.

Prof. William Hallock—The list of experiments that was under discussion this morning, prepared in connection with the report of the subcommittee on physics, is intended for the guidance of teachers. It is not intended that the student or teacher shall cover the whole of the list in a given length of time, nor is it intended that it shall be a fetter on the freedom of instruction. It is intended simply as a guide for those who need help, and others need pay simply so much attention to the list as its merits require. The desire of the committee is that the work done so far receive the approval it may deserve, and that the committee now be permitted to go ahead and prepare, with reference to this list of experiments, a few more details, such as reference to various methods and reference to literature and available apparatus. The list of experiments presented here represents the work of the committee so far, and we expect to amplify on that as a basis.

Prof. I. P. Bishop—The one science subject about which there seems to be most confusion at present is physiology, with special reference to the teaching of narcotics and stimulants. As the result of a somewhat extended inquiry among teachers, I find that the colleges are teaching it one way and the secondary schools another.

the Genesee, where accommodations may be secured at $3 a da American plan, or $1 a day, European plan.

Signed by the local committee of the department of natural science instruction, N. E. A., Buffalo, 1896

Prof. Irving P. Bishop, chairman
Dr Franklin W. Barrows
Prof. Herbert M. Hill
Dr John A. Miller
Prof. William H. Pitt
Prof. Adolf Duschak
Prof. A. W. Shepard

The following announcements are made by the

Department of natural science instruction

Meetings in Y. M. C. A. Hall, Pearl and Mohawk.

President, Charles E. Bessey, Lincoln, Neb.
Vice-President, Wilbur S. Jackman, Englewood, Ill.
Secretary, Charles S. Palmer, Boulder, Col.

Thursday, July 9, 3 p. m.

Opening address. By the president, Charles E. Bessey, University of Nebraska.

Address on physics. By H. S. Carhart, University of Michigan.

Address on chemistry. By P. C. Freer, University of Michigan.

Friday, July 10, 3 p. m.

Address on botany. By J. M. Coulter, University of Chicago

Address on zoology. By D. S. Jordan, Leland Stanford j university.

There will be one or two geological excursions, to be announced later.

A public reception will be given to Professors Bessey, Coulter, Jordan and other prominent members of the department.

The science department of the N. E. A. sends you a specia invitation to be present at its meetings at the Y. M. C. A hall, July 9 and 10.

(Signed) Charles Skeele Palmer, Secretary

Please mail this slip at your earliest convenience to Prof. Irving P. Bishop, 109 Norwood avenue, Buffalo, N. Y.

Date.....................189

I expect to be present at the organization of the New York state association of science teachers, in Buffalo, July 8, 1896

Name ....
Position ....
School ....
Postoffice address...............................

About 75 teachers replied to this letter expressing interest in the project and offering their support.

The organization of the New York state science teachers association was effected July 8, 1896 at 5 p. m. in the Y. M. C. A. hall, Buffalo, about 50 persons being present. The meeting was called to order by Prof. Bishop, chairman of the local committee. Dr Herbert M. Hill, of Buffalo, was then elected chairman of the meeting, and Dr Franklin W. Barrows, of Buffalo, secretary. Dr John A. Miller, of Buffalo, Prof. Adolf Duschak, of Buffalo, and Prof. George F. Atkinson of Cornell university were elected a committee on nominations and constitution. During the deliberations of this committee the aims and work of the proposed organization were discussed by Pres. Jacob G. Schurman of Cornell university, Prof. S. H. Gage, of Cornell university, Prof. Irving P. Bishop, of the Buffalo normal school, Prof. Richard E. Dodge of Teachers college, New York, Prin. Charles W. Randall, of Lockport, Prof. Charles E. Bessey, of the University of Nebraska, Prof. Charles Skeele Palmer, of the University of Colorado, Dr F. J. H. Merrill, director of the New York state museum at Albany, Prof. Albert H. Tuttle, of the University of Virginia, and Charles N. Cobb, inspector, of the University of the State of New York.

The following officers were elected to serve till Jan. 1, 1897:

President, Prof. Simon H. Gage, of Cornell university

Vice-President, Dr Charles W. Hargitt, of Syracuse university

Secretary and treasurer, Dr Franklin W. Barrows, of Buffalo high school

A constitution was adopted, subject to revision at the first annual meeting. The officers were authorized to organize a board of government and with their assistance to manage all the affairs of the association till the first annual meeting.

The first meeting of the officers was held August 24, at the home of A. T. Kerr, Buffalo. It was decided to call a meeting of the association and its friends on August 26, in connection with the sectional meetings of the American association for the advancement of science, then in session in Buffalo.

The following members of the association were chosen to serve as an advisory council till the next regular election:

Prof. ALBERT L. AREY, Rochester free academy

Prof. CHARLES L. BRISTOL, New York university

Another most important step in the work of the association was taken as the result of a conference of those interested in the teaching of physics. A committee consisting of Profs. Hallock, Arey, and Bishop was chosen by this conference to formulate and present a plan of laboratory requirements in physics suitable to the secondary schools of the state. This committee, after a preliminary meeting at Ithaca in 1897, presented its final report at the New York meeting, 1898.

The following officers were elected for 1897:

President, Dr Edward L. Nichols, Cornell university

Vice-President, Dr Charles W. Hargitt, Syracuse university

Secretary and treasurer, Franklin W. Barrows, Buffalo high school

Executive council

4 years	Dr Charles W. Dodge, University of Rochester Prin. Henry Pease, Medina high school Prof. W. C. Peckham, Adelphi college, Brooklyn
3 years	Prof. J. McKeen Cattell, Columbia university, New York Prof. LeRoy C. Cooley, Vassar college, Poughkeepsie Prof. E. R. Whitney, Binghamton high school
2 years	Prof. Irving P. Bishop, Buffalo state normal school Charles N. Cobb, Regents office, Albany Prof. C. S. Prosser, Union university, Schenectady
1 year	Prof. Albert L. Arey, Rochester free academy Prof. R. E. Dodge, Teachers college, New York Prin. T. B. Stowell, Potsdam normal school

A full report of the Syracuse meeting, by the secretary, is published in *Science*, v. 5, nos. 116-118, March 19, 26, and April 2, 1897. The address of the president is given below.

THE PURPOSE OF THE NEW YORK STATE SCIENCE TEACHERS ASSOCIATION AND THE WORK IT HOPES TO ACCOMPLISH

BY PROF. SIMON HENRY GAGE, CORNELL UNIVERSITY

It is a source of congratulation that the science teachers of the Empire state are no longer to remain scattered and unorganized, but by association are to gain the encouragement and enthusiasm which united effort brings. That enthusiasm and efficiency are promoted by such organizations of science teachers is abundantly attested by the results gained through the efforts of the American society of naturalists, and the teachers of Illinois, Colorado, California and of other sections.

An association like this makes it easier for the college and for the secondary school teacher to come together and talk over matters of mutual interest and concern. In these friendly consultations and discussions there will be a chance of finding out something of what is most desirable, and what is practicable and possible in the schools each represents. And in these discussions it will not be possible to forget the children in the elementary schools, the great majority of whom come neither under the training of the high school nor of the college, but must be content to get the best they can from the elementary schools to equip them for the struggle of life which stands so near them. What help have these a right to ask from the high school and the college? And then the great world of thought and action whose mighty stream, sooner or later, draws all into it, what does it demand? It is after all the final court which tries all alike, and puts each to the test whether he be a college graduate, high school graduate, pupil of an elementary school or one who has only his hereditary endowment of mother wit.

The signs of the times all indicate that the high school teacher is to be at least a college graduate, and the elementary school teacher a high school graduate. If this is true, while the college has but few under its immediate instruction, it determines the character of the high school, and in turn the high school determines the character of the elementary school. The college is then the intellectual guide of the land. Is it and has it always been a wise and sympathetic guide?

If we compare our times with those of 500 or even 100 years ago there will be found an immense difference, and science is largely responsible for this difference. Whether we approve or not, things are not as they once were; whether we designate the change as one of progress or decline, there has been change, the world is not what it once was. The modern citizen must adapt himself to these changes or be ground to powder in the struggle for existence or for preeminence. The professional man, if he is a physician, is a criminal if he does not know and apply the science bearing upon his profession; and the lawyer who has only the knowledge that the middle ages might have given him is soon eliminated from the race. It is with hesitation that I speak of the clergyman, but if he misrepresents nature which he might know, and to which he so often reverts for illustration, how can he expect unhesitating acceptance of his words concerning the profound mysteries that all, even the most favored, must "now see through a glass darkly." The artisan, the farmer and the business man can not live as did their forefathers; and so from the professions, from all the people there comes an appeal so earnest, so pressing that we can not choose but hear. If they suffer for lack of knowledge we must do our best to supply the knowledge. In place of lofty isolation, or worse, of indifference, we should give them the science we possess, show them the way it is gained, and how much there is yet to be gained and thus make every boy and girl and through them every man and woman in our great state an observer or original investigator in science. This can come about only when real science is taught and studied, only when the fog of opinion and baseless authority is brushed aside and the pupils in the schools are brought in direct contact with nature, and there learn to appreciate and apply the scientific method so admirably stated by St Paul: " Prove all things, hold fast that which is good."

Our association ought not and can not stop with the work of the high school. From the elementary schools most pupils must enter upon the labors of life; they make the bulk of the state, and a noble patriotism should lead us to do all we can for them. On the principle of self preservation also such help is wise, for the work of high school and college alike have their foundations laid in the elementary school. As the college reaches down to help and encourage the high school so should the high school reach down and help and encourage the elementary school and thus will it come about that every child in the state will be brought into direct contact with nature where he can experience for himself her inspiring and uplifting sympathy.

If this program is to be carried out, the college must train its students and prepare them to take the true science, science at first hand into the high school and banish therefrom anything savoring of sham. Then the college must honor its graduates by accepting for entrance the work in science of the high school on equal terms with other subjects taught by its graduates. To bring this about, I take it, is one of the duties of this association. Thanks to the work of the American society of naturalists, and to the many able men and women who have worked for the same end, science work done in the high school is at the present moment recognized by a considerable number of colleges. [See *Science*, Dec. 25, 1896]

It is discouraging, almost prohibitive for the college to say to the secondary school: When you reach the proper degree of excellence in your science work, the college will consider your appeal for recognition. Why can not the college state fairly and explicitly exactly what the standard of excellence should be and with equal fairness and justice say, When your students reach this standard we will accept them for entrance on the same terms as for other good preparatory work? No true friend of science would ask the college to admit students with a training in science inferior to that required in the older disciplines. Let the college make its standard as high as it will, but let it recognize the work that comes up to its requirements, and thereby honor its own graduates who have so worthily brought the work of their pupils up to the high standard. Such recognition would put science on a fair footing with the other disciplines. It would encourage and inspire the teacher in the second
ary schools and help to give his work a dignity and importance i
the eyes of his pupils and colleagues which it can never have if
is not honored by the college. Men still respect and honor wh
the college approves, and it is a part of our work to see to it t
the college puts the seal of its approval on sound learning in scie
as well as on that of the other disciplines which it accepts for
trance to its halls.

It seems to me that the way before us is clear. Changed c
tions have brought new needs, needs that knowledge of scienc
alone supply. We should do our best to help our day and g

tion, and in giving it the help of science and the sympathy of nature I feel confident that we are doing right in every way. Science taught as every true teacher will teach it, will help the students to gain an insight into nature, will bring them face to face with reality, with law and order, and certainly will form at least one element in a noble education. It will emphasize the old lesson, that power over nature comes only by obedience to her, and by this obedience which can come only through understanding, discipline is gained. By action in accordance with law which is understood, and by reflection come culture. With this discipline and culture come large sympathies and a wide outlook upon the universe. There comes also the consciousness that while the current of life and law is irresistible, man is a part of the mighty current and his will has its due share in directing it.

Aug. 19, 1897, a meeting of the executive council was held at the Queen's hotel, Toronto, for the convenience of those members who were attending the meeting of the British association for the advancement of science. Pres. Nichols, Messrs Arey, Cobb, C. W. Dodge, R. E. Dodge, and Barrows were present. As a result of recommendations adopted here, Ithaca was selected as the next place of meeting and the council committed itself to the plan of holding two meetings of the association each year.

Second annual meeting

ITHACA, DEC. 30-31, 1897

PROGRAM

Thursday, December 30

2.30 p. m. Registration of attending members at the headquarters of the association in Boardman hall.

3 p. m. Opening session in the physical lecture room, Franklin hall.
Address of welcome. By Pres. J. G. SCHURMAN.

3.30 p. m. Physical laboratory work in secondary schools.
a Shall it be principally qualitative or quantitative?
b How much time shall be given to it?
c Supervision.
Paper by Miss MARY E. DANN, of the Girls high school, Brooklyn.

Prin. THOMAS B. LOVELL, Niagara Falls high school, (elected to fill out the unexpired term of Prin. Henry Pease, removed from the state).

The general reports of the Ithaca meeting, by the secretary, were published in *Science*, v. 7, no. 174, Ap. 29, 1898, and in *School journal*, New York, v. 56, nos. 12-13, Mar. 19, 26, 1898. The preliminary report of the committee of nine was published in the *Journal of pedagogy*, Syracuse, v. 11, no. 2, April 1898. Dr Underwood's paper appeared in the same number. Miss Dann's paper was published in the following number of the same journal, July 1898. An abstract of Prin. Vogt's paper appeared in the *School journal*, v. 56, no. 21, May 21, and an abstract of Pres. Nichols's lecture in the same journal v. 57, no. 20, Dec. 3, 1898.

During the summer and fall of 1898 three conferences of the executive council were held, no quorum being present. The first conference was in Boston during the meeting of the A. A. A. S., the second in Rochester, on Oct. 14, and the third in Buffalo, Nov. 22. The most important result of these meetings was the arrangement between the council and the regents of the University of the State of New York, by which the regents agreed to print and circulate the program and report of the next meeting.

NECROLOGY

Henry Clarke Coon, M.A. M.D. Ph.D., was born Jan. 28, 1828, at West Edmeston, Otsego county, N. Y., and died May 9, 1898, at Alfred, N. Y. He attended an excellent district schoo and had access to a valuable library which early inspired him with love for learning.

At 19 he entered DeRuyter institute, DeRuyter, N. Y., wher he spent nearly two years. For several years thereafter he was engaged in teaching in district schools and academies.

From 1860-64 he taught in Hopkinton academy at Ashaw R. I. In 1864 he entered college in the classical course in Alf university, graduating with the degree of B. A. in 1868. For succeeding three years he taught Greek and natural science DeRuyter institute. The year 1871-72 he spent in the New before the existence of a separate association for the six hundred science teachers of the state will be fully justified by results. To this end we invite your earnest attention to the accompanying program, and to the claims of the association upon your thoughts. We trust that you will make an effort to attend the December meeting, and, if that is not possible, we look to you to identify yourself with the organization and to aid in the advancement of our mutual interests.

The signs of the times all point to a rising wave of interest in science teaching. It is not confined to the high school or the college and university, but extends into the lowest school in the state. There is a feeling that science has a vital relation to the life of every human being and that each one should have opportunity to become acquainted with it both for its practical usefulness and because of its lessons in law and order, and its power to truly cultivate the human mind. The simple question which confronts us as teachers of science is: Shall we use our knowledge and experience in aiding the wise application of the power in this rising wave of desire for science teaching?

We are fortunate in having our meeting directly after the 12th holiday conference of the Associated academic principals of the state of New York, which occurs at Syracuse, Monday, Tuesday and Wednesday, Dec. 28-30, 1896.

First annual meeting

HELD IN SYRACUSE, DEC. 29, 30 AND 31, 1896

PROGRAM

Tuesday, Dec. 29

8 p. m. By invitation of the Associated academic principals, this association and the Association of grammar school principals united with them in joint session.

1 Address by Pres. J. G. Schurman, of Cornell university on "College entrance requirements and the high school curriculum." [Reported in the Proceedings of the 12th annual conference of the Associated academic principals. *Regents bulletin* 40]

2 Discussion: "Music in the schools."

Wednesday, Dec. 30

9 a. m. Meeting of advisory council at the Yates.

2.30 p. m. First session at the high school.

1 The president, Prof. Simon H. Gage, of Cornell university, presented a paper on "The purpose of the New York state science teachers association and the work it hopes to accomplish."

Gibson, J. J., Montclair, N. J.
Gillmore, Gertrude, 49 Garden place, Brooklyn
Goodrich, A. L., Utica academy
Gorton, J. Irving, 22 Dale av., Sing Sing
Graham, W., Syracuse university
Greene, W. J., Lewiston
Greenwood, John W., Buffalo normal school
Griffis, Henry L., New Paltz normal school

Haanel, Eugene, Syracuse university
Hallock, William, Columbia university
Hargitt, Charles W., Syracuse university
Harper, Charles A., Columbia university
Harris, S. G., Baldwinsville academy
Hering, D. W., New York university
Hixon, Kate B., 24 E. 128 st., New York
Hodges, G. C., 129 John st., Utica
Hopping, Roy, 5 Dey st., New York
Hoxie, Jane L., 109 W. 54 st., New York
Hubbard, Dwight L., 117 W. 93 st., New York
Hudson, George H., Plattsburg normal school
Humphrey, O. D., Jamaica, N. Y.
Hunt, Arthur E., Manual training high school, Brooklyn
Hurd, Frances, Oneonta normal school
Hyde, F. S., 215 Schermerhorn st., Brooklyn

Jameson, J. M., Pratt institute, Brooklyn
Jaquish, Benjamin M., 204 W. 106 st., New York
Jewett, Franklin N., Fredonia normal school
Jouet, C. H., Roselle, N. J.

Kauffman, W. L., Yonkers high school
Kelly (Mrs) H. A., 669 Madison av., New York
Kelly, H. A., 109 W. 54 st., New York
Kemp, James F., Columbia university
Kenyon, O. C., 110 Lancaster av., Syracuse
Kingsbury, George H., Elmhurst high school
Knapp, Allen H., Canton high school

Langworthy, William F., Colgate academy, Hamilton
Laurence, Clara Louise, Waterville
Lennon, Alice L., Brockport normal school
Lennon, W. H., Brockport normal school
Lewis, Fred Z., Boys high school, Brooklyn
Lewis, (Mrs) Lucy S., 30 Clifton place, Brooklyn
Linville, Henry R., 60 W. 13 st., New York
Lloyd, Francis E., Teachers college
Loeb, Morris, New York university

Lovell, Thomas B., Niagara Falls high school
Lyon, Catherine E., 86 East av., Rochester
Lyon, Howard, Oneonta normal school

Mac Claughry, Molly, Saratoga Springs
McGreevy, Thomas, 200 Albany st., Buffalo
McKay, John S., 460 Green av., Brooklyn
McMurry, Frank M., Teachers college
Mann, Warren, Potsdam normal school
Mar, Frederick W., Boys high school, Brooklyn
Marcella, Sister M., Nazareth academy, Rochester
Matteson, Florence M., Oneonta normal school
Maury, Mytton, 109 Cascadilla, Ithaca
Mead, F. L., Madison school, Syracuse
Mercer, W. F., Chamberlain institute, Randolph
Merrill, F. J. H., New York state museum, Albany
Moler, G. S., 106 University av., Ithaca
Moore, Katherine Rowe, Dresden
Moore, V. A., New York state veterinary college, Ithaca
Morrey, William T., 107 W. 104 st., New York
Morrill, A. D., Hamilton college
Morse, H. L. F., Troy high school
Murphy, Charles T., 353 Adelphi st., Brooklyn

Nichols, Edward L., Cornell university

Osborn, Henry F., Columbia university

Paddock, Bertha L., Franklin academy, Malone
Palmer, Lelia B., North Bridgewater
Pattee, Ernest N., Syracuse university
Peabody, James E., 3 av. and 157 st., New York
Peck, Henry A., 307 Waverly place, Syracuse
Peckham, W. C., Adelphi college, Brooklyn
Piez, Richard K., Oswego normal school
Pingrey (Mrs) Cora E., White Plains high school
Piper, P. F., Buffalo central high school
Proper, Emberson E., Boys high school, Brooklyn
Prosser, C. S., Union university

Quereau, E. C., Syracuse university

Raneson, Edward B., 226 E 16 st., New York
Reed, Raymond C., New York state veterinary college, Ithaca
Rich, J. F., Batavia
Richards, Charles R., Teachers college
Robinson, Emma C., 419 S. First av., Mt Vernon
Rogers, F. J., Ithaca
Rogers, Mary F., Ithaca

Rollins, Frank, 356 W. 145 st., New York
Rowlee, W. W., Cornell university
Ruedemann, Rudolf, Dolgeville union school
Russell, Henry R., 542 9 st., Brooklyn

Sage, L. Belle, 413 Laurens st., Olean
St John, Thomas M., 352 W. 56 st., New York
Sampson, Ezra W., 178 and 3 av., New York
Sanial, Marie L., 1180 Boston av., New York
Schmitz, H. J., Geneseo normal school
Schussler, Amy, Teachers college
Scott, Charles B., Oswego normal school
Scribner, E. E., Dunkirk high school
Seymour, A. T., 3080 3 av., New York
Sharp, Clayton H., Cornell university
Shatz, Josephine, 6 Canfield place, Rochester
Shearer, John S., Cornell university
Sheldon, C. S., Oswego normal school
Sieberg, W. H. J., 138 W. 126 st., New York
Sleeper, James J., P. O. box 14, New York
Spice, Robert, 55 Irving place, Brooklyn
Sprague, Oliver A., 120 W. 46 st., New York
Stepanek, Beatrice, Canton high school
Stevens, W. Le Conte, 53 Second st., Troy
Stocker, John H., 124 Hancock st., Brooklyn
Stoller, James H., Union university
tone, Anna J., Binghamton
towell, T. B., Potsdam normal school
urface, H. A., Cornell university
weetland, Libbie, Dryden

ppan, Frances, Oneonta normal school
rr, Ralph S., Cornell university
ylor, Joseph S., Sedgewick park, Fordham Heights
ompson, Frank F., Union university
rston, R. H., Cornell university
nt, Amelia Earle, 1268 Main st., Buffalo
ner, George M., Masten park high school, Buffalo
r, A. A., Syracuse

rwood, L. M., Columbia university

Arsdale, May B., Teachers college
Frederick A., Buffalo central high school
ardroff, C. R., Erasmus Hall high school, Brooklyn
rgh, Charles H., Jamaica, L. I.
H. T., Columbia university

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University of the State of New York

High School Department

Bulletin 3 December 1899

ASSOCIATED ACADEMIC PRINCIPALS

PROCEEDINGS OF THE

14TH ANNUAL CONFERENCE

Held at Syracuse city hall, 27-29 December 1898

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ALBANY
UNIVERSITY OF THE STATE OF NEW YORK
1899

Price 25 cents

University of the State of New York

REGENTS

Elected by legislature

1874 Anson Judd Upson, D.D. LL.D. L.H.D. *Chancellor*, Glens Falls
1892 William Croswell Doane, D.D. LL.D. *Vice-Chancellor*, Albany
1873 Martin I. Townsend, M.A. LL.D. - - - Troy
1877 Chauncey M. Depew, LL.D. - - - New York
1877 Charles E. Fitch, LL.B. M.A. L.H.D. - - Rochester
1877 Orris H. Warren, D.D. - - - - Syracuse
1878 Whitelaw Reid, LL.D. - - - - New York
1881 William H. Watson, M.A. M.D. - - - Utica
1881 Henry E. Turner - - - - - Lowville
1883 St Clair McKelway, LL.D. L.H.D. D.C.L. - Brooklyn
1885 Hamilton Harris, Ph.D. LL.D. - - - Albany
1885 Daniel Beach, Ph.D. LL.D. - - - Watkins
1888 Carroll E. Smith, LL.D. - - - - Syracuse
1890 Pliny T. Sexton, LL.D. - - - - Palmyra
1890 T. Guilford Smith, M.A. C.E. LL.D. - - Buffalo
1893 Lewis A. Stimson, B.A. M.D. - - - New York
1894 Sylvester Malone - - - - - Brooklyn
1895 Albert Vander Veer, M.D. Ph.D. - - - Albany
1895 Charles R. Skinner, M.A. LL.D.
Superintendent of Public Instruction, ex officio
1897 Chester S. Lord, M.A. LL.D. - - - Brooklyn
1897 Timothy L. Woodruff, M.A. Lieutenant-Governor, ex officio
1899 Theodore Roosevelt, B.A. LL.D. Governor, ex officio
1899 John T. McDonough, LL.B. LL.D. Secretary of State, ex officio

SECRETARY

Elected by regents

Melvil Dewey, M.A.

DIRECTORS OF DEPARTMENTS

1888 Melvil Dewey, M.A.
Administrative, State library and Home Education
1890 James Russell Parsons jr, M.A. *College and High School dep'ts*
1890 Frederick J. H. Merrill, Ph.D. *State museum*

SUMMARY OF SESSIONS

Tuesday, December 27, 8 p. m.

Annual address

Sec. MELVIL DEWEY, University of the State of New York. The future work of the high school and academy in New York

Wednesday, December 28, 9.30 a. m.

Meeting called to order by Pres. J. C. NORRIS

What professional requirements should be demanded of principals and teachers in the high schools and academies?

Prin. A. W. BOESCHE, Plattsburg normal school
Prin. I. B. SMITH, Warsaw high school
Prin. A. J. MERRELL, Herkimer high school
Sup't E. L. STEVENS, Borough of Queens, New York
Sup't EMMET BELKNAP, Lockport high school
Vice-prin. A. L. TRAVIS, Hudson River institute, Claverack
Sup't JOHN KENNEDY, Batavia high school

Should schools below full high school grade—junior, middle and senior schools—be under the exclusive supervision of the University, of the department of public instruction, or under both?

Prin. C. E. KECK, Palatine Bridge union school
Prin. G. E. BALDWIN, West Hebron union school

Nominating committee appointed

Recess at 12.10 *p. m.*

Wednesday, 2.30 p. m.

Group meetings

Section 1 F. S. FOSDICK of Buffalo, *chairman*

Conducted by Prin. JAMES WINNE, Poughkeepsie high school

Correlation of subjects in grammar grades

What subject-matter is of most worth in teaching geography?

Prin. T. H. ARMSTRONG, Medina high school
Sup't JAY CRISSEY, Penn Yan
Prin. A. K. HOAG, Orchard park high school
Prin. W. L. MILLIAS, Valatie union school

Prin. L. H. Tuthill, Homer academy and union school
Prin. C. A. Black, Gowanda high school
Prin. G. W. Pye, Deposit high school
Prin. J. E. Dewey, Cuba high school
Prin. E. J. Peck, Owego free academy
Prin. E. A. Frye, Troy grammar school 3
Prin. W. T. S. Imlay, Brooklyn grammar school no. 72

Section 2 C. H. Warfield of Littlefalls, *chairman*

Metric system and Teachers annuities

Metric system

Prin. C. T. R. Smith, Lansingburg academy
Prin. J. C. Norris, Canandaigua high school

Metrological reform

Prin. J. S. Taylor, New York public school no. 19
Sec. Melvil Dewey, University of the State of New York
Ass't prin. E. P. Sisson, Colgate academy
Prin. T. I. Gifford, Troupsburg union school
Inspector E. W. Lyttle, University of the State of New York
Prin. C. E. Keck, Palatine Bridge union school

Teachers annuities

Prin. R. G. Searing, Rochester grammar school
Inspector E. W. Lyttle, University of the State of New York
Dr William J. Milne, Albany normal college
Sup't H. P. Emerson, Buffalo
Prin. Edward Hayward, Lockport high school
Prin. A. L. Goodrich, Utica free academy
Sec. Melvil Dewey, University of the State of New York

Section 3 J. G. Allen of Rochester, *chairman*

Child study in the high school

Prin. J. G. Allen, Rochester free academy
Prin. B. B. Farnsworth, Lancaster high school
Prin. C. D. Larkins, Manual training high school, Brooklyn
Sup't George Griffith, Utica
Sup't Barney Whitney, Ogdensburg
Prin. M. T. Scudder, Hillhouse high school, New Haven, Ct.

Wednesday, 8 p. m.

Revision of the regents syllabus

Report of the committee by Prin. F. D. BOYNTON, *chairman*, Ithaca high school

Should the syllabus to be made more specific in point of detail?

Prin. EDWARD HAYWARD, Lockport high school
Prin. F. A. COOK, Troy grammar school

Foreign languages

Prin. O. D. ROBINSON, Albany high school
Prin. C. A. HAMILTON, Newark high school
Prin. C. W. LARKINS, Manual training high school, Brooklyn
Prin. C. S. ESTES, Cook academy
Prin. C. A. BLACK, Gowanda high school

Natural science

Prof. A. L. AREY, Rochester free academy
Prof. F. Z. LEWIS, Canandaigua high school
Prin. T. F. BROOKINS, Ausable Forks union school

English

Prin. A. N. TAYLOR, Jamestown high school
Prin. C. W. EVANS, Elmira free academy
Prin. T. B. LOVELL, Niagara Falls high school
Prin. ARTHUR MARVIN, Schenectady union classical institute
Sup't J. L. Walthart, Silver Creek high school
Prin. J. G. ALLEN, Rochester free academy
Prin. S. R. BROWN, East Syracuse high school
Prin. A. L. GOODRICH, Utica free academy

Recess at 11 *p. m.*

Thursday, December 29, 9.40 a. m.

Reports on group meetings

Report of treasurer

Report of committee on nominations

Election of officers

Resolution in English

Introduced by Prin. F. S. FOSDICK, Masten Park high school
Prin. S. R. BROWN, East Syracuse high school

Committee on nominations. Wednesday morning the following committee on nominations was appointed: Prin. T. B. LOVELL, Prin. A. J. MERRELL, Herkimer; Prin. M. H. WALRATH. [For report *see* p. 661]

Greeting to grammar school principals. Wednesday morning Prin. J. G. Allen offered a motion to send a greeting to the grammar school principals. The motion was referred to the committee on resolutions and the resolution (see p. 702) was adopted. In response the grammar school principals sent greeting and acceptance (see p. 702).

Professional requirements. Wednesday morning on suggestion of Sup't Emmet Belknap it was

Voted, That the association cause the following resolutions to be printed for immediate distribution.

ACTION OF REGENTS

TEACHERS IN SECONDARY SCHOOLS. In laws of 1895, ch. 1031, the state declared that after 1 January 1897, no person should be "licensed to teach in the primary and grammar schools of any city authorized by law to employ a superintendent of schools who has not had successful experience in teaching for at least three years, or in lieu thereof has not completed a three years' course in and graduated from a high school or academy, having a course of study of not less than three years, and who subsequently to such graduation has not graduated from a school or class for the professional training of teachers having a course of study of not less than 38 weeks."

The least that the secondary schools ought to accept of their teachers is a college education, to which at least one year's professional training has been added, if such training was not a part of the college course. Progress toward this standard should be made by degrees.

Slight verbal changes have been made in these resolutions to remove ambiguity. In all respects, however, the intent of the original form has been preserved. Their purpose was to learn the sentiment of the secondary school teachers for the information of the board, for the purpose of proposing such ordinances as might seem wise after full consideration.

The amended statement reads as follows:

Voted, That the following ordinances be referred to the principals for consideration and that their views be submitted in tabulated form for final action by the regents:

After January 1, 1900, no institution in the University may be registered as of academic grade which employs to give secondary instruction in language, literature, mathematics, science, history or social science any one (not at that time teaching one or more of these subjects in an academic school of the University) who has not either graduated from a registered college course or satisfactorily completed a registered course in a high school, academy or normal school or had an equivalent education, and in addition, unless such training was a part of the registered course, at least one year of professional study in a registered institution or at least two years' successful experience in high school teaching.

After January 1, 1900, no University institution may be registered as a high school or as a senior school which does not employ either as principal or principal's assistant some one (unless at that time teaching as principal or principal's assistant) who has either graduated from a college or university registered by the regents as maintaining a satisfactory standard or had an equivalent education, and in addition, unless such training was a part of the registered course, at least one year of professional study in a registered institution or at least three years' successful experience in teaching in an academic school.

After January 1, 1900, the University shall keep a register of teachers certified on the recommendation of an inspector either in accordance with the above qualifications or in case of those who have not these qualifications, on the recommendation of two inspectors that their preliminary education and successful experience of at least five years be accepted as an equivalent.

EXPLANATORY NOTE

These proposed ordinances were discussed at the regents meeting, December 15, 1898. While the regents believed that all teachers in secondary schools should be graduates of a college or university recognized as maintaining a satisfactory standing and should have had in addition at least one year of professional study in a registered institution, or at least three years' successful experience in teaching in a high school, the suggested ordinances exact these qualifications only in the case either of principals or of one assistant in high schools and senior schools after January 1, 1900.

These ordinances if adopted would not apply to any one engaged in teaching in a secondary school of the University, January 1, 1900 They would not affect special teachers of drawing, music, manual training, etc. They would, however, fix a maximum standard of preliminary education and professional training, for all other teachers after January 1, 1900. Another ordinance now requires that in grading secondary schools the teaching force must be approved by a University inspector. With this protection and that afforded by the proposed ordinances touching the certification of teachers, it would be easy to recognize peculiar fitness for special lines of work. Each

teacher must necessarily hold the license required by law, but this, however satisfactory for the primary and grammar grades, is in no case a guaranty of fitness for teaching special subjects in the higher work of the secondary schools.

(See p. 661)

Syllabus revision. Wednesday evening on motion of Prin. J. G. Allen, it was

Voted, That the report of the committee on revision of the syllabus be referred to the regents office to be filed with previous reports and with any subsequent report that may be made by this committee, and that the conference proceed with the first number of the topics on the paper.

U. S. history. Thursday morning, on motion of Prin. I. B. Smith, it was

Voted, That the regents either allow credit for preliminary work in U. S. history or extend the time spent on it to one year and allow four counts for academic work.

Laboratory work. It was

Resolved, That in preparing the syllabus for 1900, the regents be requested to arrange minimum requirements in laboratory work in physical and biologic sciences as a prerequisite for examination.

Metric system. Wednesday afternoon Prin. C. T. R. Smith offered the following:

Resolved, That we hereby instruct our legislative committee to forward to the congress of the United States, if there shall be suitable occasion and opportunity, our earnest petition for the enactment of such legislation as shall render the use of the metric system obligatory throughout the United States.

Resolved, That we ask the manufacturers of school supplies to furnish inexpensive metric rules on the plan of a draftsman's scale for school use at seat and blackboard; the smaller rules to contain metric units only.

Resolved, That we urge that every schoolroom be equipped with an abundant supply of such rules, and every school with at least an exhibition meter, several tin liters of cubic form, a balance and metric weights.

Resolved, That we hereby ask the regents that, beginning Jan. 1900 they put two questions involving metric units among the optional questions set for each regents examination in arithmetic besides the required question as at present, and that we recommend rooms during your stay in our city. The library is at 335 Montgomery street, corner of Jefferson street.

Officers for 1899. The stenographer was directed to cast one ballot for the names reported by the nominating committee, and they were declared elected. (See p. 661)

Reports

Thursday a. m.

REPORT OF TREASURER

ASSOCIATED ACADEMIC PRINCIPALS

in account with S. DWIGHT ARMS, *treasurer*

1898				
Feb.	3	Balance on hand (as by published report of this date)	$408 74	
Dec.	27-29	Received dues of 1898	407	
"	29	" from Grammar school association	7	
				$822 74
1898				
Mar.	19	Paid F. D. Boynton, account of syllabus committee	$15 50	
July	18	Paid C. P. Brate, printing stationery	16	
	30	Paid S. D. Arms, account of executive committee	12 84	
Aug.	4	Paid J. C. Norris, account of executive committee	3 50	
	4	Paid E. W. Lyttle, account of executive committee	8 33	
	5	Paid Edward Hayward, account of executive committee	5 20	
Oct.	8	Paid J. C. Norris, account of executive committee	4	

1898				
Oct.	8	Paid W. D. Johnson, account of executive committee	$11	68
	8	Paid Edward Hayward, account of executive committee	3	07
	8	Paid D. C. Farr, account of executive committee	16	91
	8	Paid E. W. Lyttle account of executive committee	7	62
	15	Paid T. B. Lovell, account of executive committee	4	
	15	Paid Trunk line passenger ass'n	17	
Dec.	27	Paid bill of F. D. Boynton, account of syllabus committee	10	
	27	Paid bill of E. W. Lyttle, account of executive committee	1	40
	27	Paid bill of *Ontario county times*, printing	13	25
	27	Paid bill of S. D. Arms, postage and sundry disbursements	23	38
	27	Paid bill of J. G. Allen, account of executive committee	3	32
	27	Paid for badges	14	
	27	Paid J. C. Norris, account of executive committee	19	
	27	Paid A. B. Sackett, stenographer, account of J. C. Norris	11	05
	28	Paid Jay Crissey, account of executive committee	1	26
	28	Paid S. D. Arms, salary as secretary (1898)	25	
	29	Paid *Syracuse courier*, printing	5	
	29	Paid for New York draft		10
	30	Paid *Palmyra courier*, printing	20	
	31	Paid M. Mae Borst, stenographer	9	40

1899				
Feb.	10	Paid Myron T. Scudder, account of stenographer	$4 50	
	10	Paid C. P. Brate, printing stationery	16 30	
				$302 61
Feb.	10	Balance on hand		$520 13

The above balance is on deposit in the First national bank of Palmyra.

Accepted

Budget

The executive committee recommends the following budget for the coming year.

For executive committee	$50
For legislative committee	100
For syllabus committee	40
For printing, secretary's work and postage	60
For secretary's salary	25
For Trunk line association	10
For stenographers	40
Total	$325

Accepted and referred to 1899 *committee*

COMMITTEE ON RESOLUTIONS

E. W. Lyttle, *chairman* submitted the following report:

Teachers annuities. *Resolved,* That this association approves the work of the committee on annuities and desires it to continue its work and to formulate a plan for a state teachers annuity association.

Adopted

Metric system. The committee presented resolution (see p. 656) on metric system.

ADDRESSES, PAPERS AND DISCUSSIONS

Tuesday evening, December 27

ANNUAL ADDRESS

THE FUTURE WORK OF THE HIGH SCHOOL AND ACADEMY IN NEW YORK

BY SEC. MELVIL DEWEY, UNIVERSITY OF THE STATE OF NEW YORK

My preparation for college was not in the high school, and since graduation my work has been connected with two colleges and two universities. I have never been actively connected with a high school, yet I believe the high school is today and is to be increasingly the central and most important factor in our educational system. I am particularly interested in the colleges. You who attend the meetings of the Association of colleges and preparatory schools of the middle states and Maryland know that more than any other one man I have been an active champion of the rights of the traditional college. I am also profoundly interested in the new university, which has come to stay. We have today a half dozen institutions in this country that challenge the admiration of the world. Only the other day some of you noticed in a leading London journal an article on the teaching university needed for London by James Bryce, a keen observer and thinker who knows not only this but other countries. In this he sums up his observation of the merits and the faults of the great typical systems, German, French, English, Scotch and American, and concludes that now London would have to come to America and probably to our own Columbia in this state for the highest type of what a modern university ought to be.

Here is the high school, the most important factor. It stands in the middle of the series of our teaching institutions which we classify as elementary schools, high schools and academies, colleges, universities and professional and technical schools, five distinct groups of teaching institutions. Some of you know how intensely I am interested in those other groups of educational institutions that are just winning in these later days recognition from the public, from teachers and from the state—the libraries, museums, study clubs, the same training as he looks on the statue in the art gallery or in the park. This is what we call the museum group, and in recognition of this, in common with the best workers in education all over the world, we are recognizing as never before the picture in education. You and I can remember—those of us who were in college 25 years ago—when it was thought quite *infra dig.* for a professor to have a magic lantern in the classroom. It began to find its way into the colleges and universities, till there is hardly a subject taught now in a well organized institution without this invaluable aid. It is to the honor of New York and of the University that the regents are the first, so far as we know, to put on their records a resolution directing that there be no distinction recognized between the book and the natural language, but that wherever information or inspiration can be conveyed more readily by the picture, it be treated on exactly the same plane as the book. We are sending now to the schools beautiful wall pictures, the finest to be had in the markets of the world. We have many thousand modern slides indexed and catalogued, with lanterns equipped for any kind of light, oxyhydrogen, electric, acetylene or kerosene. From this great collection we send to any school in the state wishing such assistance, a collection of views illustrating a subject of study or a lecture or entertainment under its auspices. We have thousands of photographs from which we send to schools, study clubs or libraries following a special line of research, perhaps 200 pictures that will help them to understand more fully the subject on which they are at work. This great agency is coming rapidly to the front.

Then we come to extension teaching. Some of you will say, "Why, that was the university extension course." What I have always said in our reports and discussions year after year from the beginning has come true, that that is only a small part of this work of home education (as we prefer to call it), one of a score of agencies, a good one which still has its field, but which we never try to force on any community; though we cooperate with that according to the original plan when it selects that form. But with extension courses have gone these other features which the public were not so quick to recognize as in the same class, correspondence teaching, evening schools, vacation schools, summer institutes and every to know, on the theory that it was necessary under a republican form of government to remake the laws every year.

In all these agencies of education the high school is most important because it is the crown of the system in most localities. Universities, colleges, and professional and technical schools will be scattered, but every community except the weakest in these later days has or is looking forward to high school facilities. The principal is and ought to be a kind of educational bishop for his section. It has been in the past and ought to be in the future the strongest force in lifting up the elementary schools, for all familiar with the history of education know that education works from above down, and is not built like a house from the foundation upward, from kindergarten up to the university. That is as absurd as to raise a great safe to the top of a building by carrying the weight on the end of pike poles, working from below up instead of suspending the weight by ropes from above. In all times education has worked from above down. Our high school and academy principals have from the outset taken this position. If you will read the history of the common school system, and the address of Sup't Draper in 1891 to the state teachers association, you will find that the creation of the elementary schools and for a half century active work in their behalf came from the regents of the University, from George Clinton the first chancellor, from his successors, from the report drawn by Alexander Hamilton, all pressing for elementary schools to prepare children for the work which was under the supervision of the University. I can hardly conceive of any principal in this state whose whole heart and soul is not with the elementary schools and whose hand is not always ready to help the lower schools at every time and place. We can not do too much for them. But we must remember that some of the wisest thinkers, who have studied the subject in all its bearings, have concluded that the money spent on the high schools, great as is the sum, yields an even better return to the government. It is the age of experts, of specialists; no great undertaking is entered on now by intelligent men without employing a man trained in that particular thing. The function of the high school and of higher education is to train experts. The world is looking for high priced men. You can get 1000 men to dig dirt or do other manual labor where you can find one competent to take charge of a great enterprise. You can recruit a whole army of privates more easily than you can find competent generals, just as you can readily buy 1000 horses for $100 each, while if you want one that is worth $5000 you will have to search for it. This has proved not only in America but also in other countries that it pays to spend these large sums in carrying on education. The principle behind it is a plain one. Probably all believe it but let us review the facts. Even those who believe strongly that blood tells, that the educated father and mother are much more likely to have children of unusual promise, must admit with the best students of political economy that the results of statistics and observation prove that, while heredity counts for much, the majority of the boys and girls of unusual gifts and capacity, the men and women of genius that make the success of localities and of nations, are born among the laboring classes, because they outnumber the educated classes five to one. That is honest democracy. Whatever our theories or sympathies may be, that is the fact. A man who for lack of opportunity or incentive might have stayed in some little village and lived and died and done his work, but who goes out like Joseph Henry or Edison, or any one of the hundred whose names occur to you at once, is of a value that can not be measured in mere dollars to the community and to the state. Thomas Jefferson long ago recognized this truth, for I remember once seeing in his writings the comment that Virginia, the mother of presidents and the proud leader of the American nation at the time, would soon have to give place to New York because of Gov. Clinton's heroic efforts in behalf of education. He foresaw, wise man that he was, and George Clinton, the first chancellor of the University and the first champion of common schools and of elementary education, foresaw that the state that had the courage to face this question and to spend its money liberally for these things would inevitably lead. Let me also read to you the exact words of the constitution of Massachusetts of 1780:

Wisdom and knowledge, as well as virtue, diffused generally among the body of the people, being necessary for the preservation of their rights and liberties; and as these depend on spreading the opportunities and advantages of education in the various parts of the country, and among the different orders of the people, it shall be the duty of legislatures and magistrates, in all future periods of this commonwealth, to cherish the interests of literature and the sciences, and all seminaries of them; specially the university at Cambridge, public schools and grammar schools in the towns; to encourage private societies and public institutions, rewards and immunities, for the promotion of agriculture, arts, sciences, commerce, trades, manufactures, and a natural history of the country; to countenance and inculcate the principles of humanity and general benevolence, public and private charity, industry and frugality, honesty and punctuality in their dealings; sincerity, good humor and all social affections, and generous sentiments among the people.

The theory of the men that wrote that constitution was not that they sent the boy to school to train his memory—they did not send his memory to school, or his brain alone to school—but that they sent the whole boy to the school, and considered it the function of the school to train the whole man.

Then in 1647:

When any town shall increase to the number of 100 families as householders, they shall set up a grammar school, the masters thereof being able to instruct youths so far as they may be fitted for the university; and if any town neglect the performance thereof above one year, then every town shall pay five pounds per annum to the next such school till they shall perform this order.

In Massachusetts revised statutes:

Every town may, and every town of 500 inhabitants shall, maintain a high school for 10 months in the year, to be kept by a master of competent ability to give instruction in general history, bookkeeping, surveying, geometry, natural history, chemistry, botany and Latin.

In every town containing 4000 inhabitants the teachers of the high school shall, in addition to the branches already named, be competent to give instruction in the Greek and French languages, astronomy, geology, rhetoric, logic, intellectual and moral science, and political economy.

255 cities and towns, embracing 94.7% of the whole population maintain high schools, and the school committees of districts with-

out high schools can furnish free tuition and free transportation to adjacent high schools if they deem any pupil sufficiently advanced to profit by that kind of instruction.

The Massachusetts law of 1894 makes it compulsory for non-high school towns to pay the tuition of their children in high schools of adjoining towns.

Compulsory education away back there in the 17th century! They were watching for Indian tomahawks on one side and compelling every town to have a high school on the other.

In the constitutions of 22 of our 45 states there is distinct recognition of the high school as a prominent concern of the state.

The Georgia constitution provides that "There shall be a thorough system of common schools for the education of the children in the elementary branches of an English education only." These are the results[1]: Little Massachusetts, 8000 square miles, great Georgia, 60,000 square miles; valuation for the bleak, barren New England state where you can raise almost nothing, where the deserted farms are given away but where they have been making men under this system of high schools as over against that great rich state and its natural resources, is for Massachusetts $2,803,000,000 against $852,000,000 for Georgia; three and a half times for the barren New England state against that other state which is seven times as large, with a per capita valuation in Massachusetts of $1252 as against $464 in Georgia.

You will remember the experience in the Franco-Prussian war and how the wisest of Frenchmen in summing it up pointed out where the difficulty lay. Following that war expenditure for higher education in France rolled up sevenfold and steadily increased. It was no coincidence, it was because the wise men studied the causes of the result of that conflict. Renan summed it up in this way when some one said it was the German needle gun that conquered France: "It was not the needle gun, it was not the German soldier that held the needle gun, it was not the German

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[1] From Annals of Am. acad. 8:120:

	Pop.	Sq. m.	Total val.	Per cap.
Massachusetts	2 278 943	8 315	$2 803 645 547	$1 252
Georgia	1 837 353	59 475	852 409 449	464
New York	5 997 853	47 620	8 576 701 991	1 430

schoolmaster that made the German soldier, but it was the German university that made the German schoolmaster." They went back to first causes; they learned their lesson and paid that terrible tuition, and France since that day has been spending its money as never before on higher education. We have been waiting a century for the time which it seems to me is practically here. The public does not realize it yet. You are the people to whom the public should come for information, you should introduce the subject and make it plain in your local teachers meetings, in your debating societies, in the clubs and in a thousand ways, and at all proper seasons see to it that your people know what this practically means. In 1801, 1805 and 1819 the state appropriated as much money for the work of the secondary school as for all the elementary schools. We are all proud of putting millions of money into our elementary schools that have done so much for this state. But the time has come when we ought to recognize that more money should be spent on secondary education. Let us look at this question in the cold, clear light of experience, and I doubt if any honest, intelligent student of the question can come to any other conclusion. New York is spending an increasing amount on its high schools, but it is not yet spending half what it ought or is going to spend to advance their interests. Possibly if we had to rest our case on the right of every boy of promise to have a high school education all through the state we might fail; but it pays and we shall win in the end. We have waited almost 100 years for the people to grow up to this attitude toward the secondary schools. The free high school is rapidly taking the place of the academy, springing into life here and there all through the state. We have now 523 of those schools, but we need 1000 for this great imperial state. Till a few years ago no one thought of more than one high school in one city, but now the larger cities are duplicating till some have 10 or a dozen high schools. This results simply from the spreading of the notion that a high school education is the right of every boy and girl, and from the standpoint of the state it is not only a privilege and duty, but it is also good finance. All these considerations taken together are irresistible. This position has been attacked by demagogues, and by that to visitors. Finally, it must be kept scrupulously clean, and that is neither easy nor cheap. In my judgment, the principal that sets this high standard for his school and holds steadily to it will be quite as likely to carry his point as if he aimed merely for inferior grounds and buildings, because he will enlist the pride of his community.

Every school feels the need of apparatus and laboratories and of adequate books on the subjects studied. The gain in this state has been very great. I read on the train this afternoon the report of the apparatus inspector showing the immense strides made in the last 10 years and pointing out also the advance that must be made in the next 10 years to reach a satisfactory standard.

With adequate building and equipment for its work is needed a faculty, a teaching force. There should be more teachers, better teachers and better salaries, and a definite tenure of office. But the fact that a man is now a teacher does not necessarily prove that he is worth a higher salary. There are probably many teachers in this state who are getting all and perhaps more than they earn, but we are not talking about abstract principles but individual applications. We want and are going to have more teachers, better teachers and better salaries.

I believe the standard for these teachers should accord with that simple rule which nobody ever questions; that a pupil is entitled to have for his teacher a man who has had the advantage of a school one grade higher than his own. The college student has a right to a university graduate for his professor, the high school student has a right to the instruction of a college graduate, and the children in the elementary schools ought to have at least high school graduates for their teachers. That is a sound and elementary principle.

We ought to ask from the state, after waiting all this time, sufficient public money (distributing the expense over the whole state instead of throwing it on the locality) to add $100 to the salary of every college graduate who has supplemented his college course with a professional course in education in order to encourage proper professional preparation. I think the normal schools ought to require without exception graduation from the high school as a con-than to antagonize the honest educational convictions of the people. The people will tolerate much, but they will not tolerate and will consign to political oblivion a man who undertakes to stand in the way of proper provision for the educational interests of the state. I have mentioned once already tonight that in earlier days the great governors of New York who made her famous were also active in the University, attended meetings, and five of them served as chancellors. Recently, with the single exception of Alonzo B. Cornell, whose name is so linked with our great university, no governor has attended the regents meetings or served on the executive or any standing committee. It is our good fortune to have coming into the executive chamber within the week a man who in himself represents the best of higher educational facilities at home and abroad, who has himself contributed more than any other governor of New York to American literature, who is earnestly and intelligently interested in education in all its phases. I am glad to say to you that when in our annual meeting the other day some one asked, "Won't Gov. Roosevelt be inclined to go back to the best traditions of early New York and be an active regent?" from two sources came the response, "He has said he proposes to attend every meeting." I wrote him the other day saying that not only the regents but all New Yorkers who understood the circumstances would be highly gratified to know that he was to be not only a regent ex officio but actively, and that he had been asked to accept the chairmanship of one of the most important standing committees and a place on the executive committee, but that we hesitated with all the cares upon him to ask him whether he would consider it. He did not wait to write a letter but telegraphed at once, "I accept with great pleasure." [Great applause] These things give us new courage.

The high school ought to turn out every boy and girl with complete control of all his powers, mental, moral and physical, so that he can use them with precision, with strength and with speed. The whole boy ought to go to school. It is your responsibility if the boy in after life fails in other things than in his algebra or Latin. It is not enough to say that he shall be taught this and that with the single exception of religious doctrine. I consider it your duty to turn out every boy and girl who comes under your influence an efficient citizen, able to do his work, whatever it be, well. That throws on the school a heavy responsibility. That is why I believe in cultivating the interest specially of the graduates of the school. If my school were the smallest junior school in New York, I would have those things that make the pupils feel that the school is their alma mater and that after they go out in the community they ought to come back to the school as a kind of intellectual club. There should be in the high school a place for music and for art; it should be the center of the intellectual life of the community, not merely a place to go to school, but with its buildings, grounds and equipment, it should be a common meeting place for the whole community. That may seem to some extravagant, but in different places they are building schools of that sort. They are as well equipped as the best clubs in the city; they have libraries, reading and club rooms, swimming tanks and gymnasiums, and are the place where the graduate can come back and feel at home and that he is a member with rights. Is it not better to set a high ideal and hope to get it rather than content yourself with anything less? If you aim at the sun you may hit the moon.

In the past many students have been compelled to take a special course of one or two years at a fitting school in order to be admitted to a college. In the west it is the accepted function of the high school to prepare for college. But in the east our colleges have taken the great majority of their students from fitting schools and academies. Our secondary schools should give the best education they can in four years, and the college that will not admit to a degree course a student who has successfully completed a four year course in a secondary school of good standing, might better and will have to go out of business, for the country is full of colleges that will do it and the number is increasing every year.

I believe from the bottom of my heart that the high school is the central and most important factor in our whole educational system, and that its importance will grow from year to year with great rapidity. Just now, at the close of this century, is the time when we ought all to know what is wanted and not be backward in declaring that we are right. We are sure to win on these grounds. We shall have with us not only the best educational sentiment but also the best thought of the best men and women of the state in seeking for these new ideals and for this higher plane of work. You have done great things in the past. I am proud of that past; but I believe that the typical high school of 20 years hence will be vastly in advance of that of today, and that it will be on the lines I have suggested to you tonight. It is inspiring to think what may be done. We have waited patiently; but in my judgment the time has now come to encourage the high school at every turn.

Those who object to starting any high school till it can be fullfledged, want to walk without creeping. I fail to see any way to develop a high school in a community except by making a beginning. Start if necessary with $1000 and aim for $100,000, turning neither to the right nor the left. We used to have schools calling themselves high schools if they taught a little algebra. The regents made a rule a few years ago that such schools must give up the large name or do more academic work, requiring at least 12 full academic counts. Many schools increased their libraries, apparatus and teaching force, 48 having raised their standards last year alone. Some of you in the larger schools can hardly realize all that this means. It meant improving the schoolhouse, doubling the size, putting in plumbing, enlarging and putting grounds in proper condition, and a dozen other things that the inspectors suggested as necessary. It meant new teachers. It meant that teachers must have had professional training. More than all the rest, it meant two things: that in the winter when there was nothing to do, boys and girls who had completed the course went back to school; the other was that it roused the interest of the whole community. They had a commencement to which everybody went; it was the event of the year. They became interested in educational matters; they talked with the principals; they started a public library, and a new intellectual life came into the community.

fantry to quarrel with the artillery in time of action. The state ought to do more, and the communities ought to do more for the secondary schools of the Empire state. It can not be done in a day or a year; but if it is a long labor, it is high time it were begun:

> Heaven is not reached at a single bound,
> But we build the ladder by which we rise
> From the lowly earth to the vaulted skies,
> And we mount to its summit, round by round.

Wednesday morning, December 28

Prin. J. C. Norris—We call this the 14th holiday conference of the Associated academic principals of the state of New York; it is really the 15th. In December 1884 three well known principals of the state met in this city and discussed plans which culminated one year later in what we call our first annual meeting. Those three men were Prin. Cutting of Auburn high school, Prin. Bacon of Syracuse high school and Prin. Farr of Glens Falls academy.

Early in December 1885, a few of us here tonight received this letter:

Auburn, N. Y., Dec. 7, 1885

Dear sir:

I am convinced that a yearly meeting of the principals of high schools and other institutions of academic grade would be highly profitable. Such a meeting should not in time or methods interfere with our annual convocation which is invaluable to every one of us. The meeting I have in mind should involve only our own interests, should not be a general educational convention, should not be large in its membership or formal in its program. I would not have any papers prepared, but simply such topics discussed as relate to our every-day work. Each should feel free to state his own methods of teaching specific branches, or directing the work of associate teachers; to explain plans of discipline etc., to make or answer inquiries; in short a meeting that, beyond the benefits of personal acquaintance, should be practical and profitable because it meets our direct wants, relative to our own work, for we are all looking for the best results.

Five queries

1 Do you feel the need of such an interchange?

2 Would Syracuse, the central city of our state, be convenient as a place for the first meeting?

3 Would December 29 and 30 be convenient days?

4 What topics would you like to have discussed?

5 Will you answer these inquiries by return mail, if the above proposition meets in any way your wants, making any suggestions whatever relative to the matter?

If a sufficient number of favorable replies is received, I will arrange for special hotel rates if requested for the first meeting, and will notify you as to details by a second letter.

In the interests of our profession,

G. R. Cutting, *Principal* Auburn high school

This was followed by another circular letter dated December 17 giving a definite invitation to attend a holiday conference at the Syracuse high school December 29-30. The records of that meeting show a registration of 60 names, all but seven of whom were active principals. Those who attended received the invitation with surprise, but we soon recognized the importance of such a conference.

It was a time of educational awakening specially with secondary schools. Academies and high schools were working out their problems each in its own way. Supervision and guidance by the regents office was little understood. There was confusion regarding the proper work for secondary schools, more confusion regarding their relations to the college and university and confusion worse confounded regarding courses of study. It was time for principals of secondary schools to compare notes, to teach and learn from one another and to call to their deliberations the regents office, the department of public instruction and the colleges of the state. That first meeting in 1885 was a small one but its effect and value were soon recognized. This conference has grown in its interest, value and power, till it is now acknowledged one of the most important in the country. There were 60 present in 1885, 97 in 1886, 99 in 1887 and 137 in 1888. I have no later figures till last year, when we registered 371.

Credit for the remarkable educational growth in this state during the last 15 years is due in no small measure to our academic meetings. The convocation each summer in Albany deserves and receives our high regard and our faithful attendance, but much of the discussion there must necessarily be on matters of little interest to this body. The state teachers association has been of great value to schools in general, but there too we find much outside our special work. Here our interest is held by almost every topic in each session. Here no long formal papers have been tolerated. Here we meet the oldest and youngest in point of service on one level, each ready to give from his experience, and as ready to receive. The principal who habitually absents himself from these educational gatherings makes a serious mistake.

That this conference has not only affected the working of secondary schools is shown by the result of the 1887 meeting. The old question of adequate preparation for college was one of the principal topics discussed. We received our usual scolding from college representatives for sending our boys to them poorly prepared and for a time it seemed that we would as usual plead guilty to the indictment. One of our number turned the tables by asking the college men why they received our boys before we are ready to let them go. "You say that our boys come to you with insufficient preparation; then why do you take them? We are not ready to let them go, we know they should stay with us a year or two more; but when a boy finds that you will receive him, we can hold him to no further work." It was a side of the question that had not been presented before but its force was evident. The president of one of our strongest universities rose and confessed that his institution was a great sinner and he professed repentance and promised reformation. Many colleges have improved in this particular in 10 years. Am I wrong in claiming for this conference some credit for the change?

At the second meeting of this body a precedent was established from which to my knowledge there has been no deviation. A resolution was introduced at one of our business sessions, eulogizing a teacher who had died a few weeks before. Dr Bacon objected tactfully but earnestly, urging that this body could not afford to entertain resolutions commending or condemning any man living or dea and the resolution was wisely laid on the table. But we did n consider the precedent violated when one year ago tonight our st superintendent paid a tribute to Dr Sheldon and presented a p for a monument to that great educator and man.

will suffice for us to trace the development of German schools to those influences which for more than a century have been potent in what is now the largest state of the empire. Whatever may be said of the powerful impetus which the German reformation and renaissance have given to German education, it remains true that with flagging protestantism this enthusiasm became also enervated and dormant. The greatness of modern German schools is to be traced to the source to which the political importance of Germany must be traced, to the Prussian principle of government. This principle first became fully realized in the reign of that great monarch who though an absolutist like Louis 14, gave to the French monarch's "*L'état, c'est moi*" the noble answer "The king is the first servant of the state." It was in the reign of the noble Frederick, the maker of Prussia and the precursor of Otto von Bismarck, that schools ceased to be church appendages. The articles which, modified now and then, have governed Prussian and German education, were drawn up though not promulgated in his reign. The important declarations of these articles were as follows:

> Schools and universities are state institutions, having for their object the instruction of youth in useful information and scientific knowledge.
>
> Such establishments are to be instituted only with the state's previous knowledge and consent.
>
> All public schools and public establishments of education are under the state's supervision and must at all times submit themselves to its examinations and inspections.
>
> The teachers in the gymnasiums and other higher schools have the character of state functionaries.

These articles, let it be remembered, were adopted more than a hundred years ago and these have been years of unremittent labor and resulting continuous progress. This is the foundation of modern German education; it is wholly under the control of the state. This may mean much and it may mean little. Why does it mean much in Germany? .

Perhaps you have read in Gustav Freytag's *Pictures from Germany's past* the pathetic account of the old soldier of Frederick the Great. Having been appointed to some petty office, such as that of tax collector, he would toil from morning till night and count into wooden dishes the groschens of the tax-paying burghers till his for the higher schools of Prussia are directly under the control of the provincial board.

Why does this system produce excellent results? Because, from the youngest upward each teacher is responsible to someone not only his superior in rank but also in knowledge and experience. The teacher is judged by the director (or principal), the director by the provincial board, the provincial board by the central board, the central board by the superintendent and through him all members of this great system are responsible to the first servant of the state. This system has produced great universities and the universities have created a high teaching standard, compelling every teacher after he has gained a thorough general education in the gymnasium, to confine himself to three or four related subjects to which he limits his teaching. You know this. But if you ask, whether in such a governmental system as I have described politics do not interfere with the appointment of teachers, the answer is, Not at all. The German civil service in general and schools in particular keep aloof from the harmful atmosphere of wire-pulling politics, because the system makes such politics impossible. Personal favoritism may be effective now and then, but not often, for the system also prevents this. Even then the rigid state examinations make it almost impossible for a really incompetent man to be appointed to any position. During the constitutional conflict in Prussia in the early sixties and a decade later during the *Kulturkampf*, teachers who did not openly attack the government were left undisturbed. Teaching in Germany has thus become an honored profession because it is a real profession, where admission and advancement can be gained only by hard toil. And it is a noble profession because its members can devote themselves to higher ideals without being hampered by petty considerations. It is filled with a genuine enthusiasm, the natural result of thorough learning, and is generally contented because every member feels that if he does his duty it will be known, and that he will advance steadily and live comfortably though never in luxury, and that after a life devoted to duty the state which he has faithfully served will not let him suffer want in old age.

majority of his teachers should be college bred, and should have sufficient normal training and experience to enable them to handle to the best advantage the subjects taught, regardless of whether the pupils are preparing for college, finishing their school education or killing time. We are all ready to admit that the best results can not be gained when the teacher's limit of knowledge is the same as that of his pupil.

Practically however the limits of the professional training of our high school teachers are marked by the third grade certificate on the one hand and on the other the qualifications demanded by the inclinations of a board of education backed by a large, wealthy, intelligent community. Without the minimum the teacher can not draw her $8 a week nor the district the quota, while the services of trained, experienced specialists are easily secured by the wealthier boards, who realize that they must offer from $1000 to $3000 for suitable teachers. Between the two limits, both of training and of salary, the high school teachers of our great state run the entire gamut. Our cities and larger villages will naturally, on account of the many students demanding the best and their own financial ability, require the maximum of training; many of the smaller villages will not, can not or do not.

The present minimum is the third grade certificate or the temporary license to which the boy's definition of a lie would well apply "An abomination unto the Lord but a very present help in time of trouble." This certificate, admirable in its purpose and scope, does not contain any guaranty that its holder is qualified to teach any department of the high school curriculum. Some such protection is needed. The story is told of the person who was asked if she could teach French. "I never studied it" she replied, "but I had an aunt whose maiden name was French, and I'll do my best." Three years ago the principal of a regents school ground out for the first time his Caesar and Cicero at night and tried to take his classes the next day over the same ground. These are extreme cases. The first is often possible in principle. Many principals present, specially those who are or have been in charge of the smaller schools, know how frequently it seems necessary, in the arrangement of a program, to assign to a teacher classes in subjects which are unfamiliar or unknown to her. If in the first illustration the teacher could hold only a third grade certificate no outsider could interfere with her teaching French, and in the second the principal was protected by a normal diploma and taught his Latin like physics by experiment. If pupils or parents had any rights, they were disregarded.

Under ch. 1031, § 4, the minimum requirements for primary and intermediate teachers in the cities of the state are set forth. There is no minimum at present for high school teachers except the third grade certificate. The latest move in this direction was made this fall. At the October meeting of the superintendents at Glens Falls a series of resolutions was referred to the committee on legislation with authority to secure action if possible. The three specifications therein made, and bearing on our topic, were that after May 1, 1899, no high school teacher should be appointed, in any city or village authorized by law to employ a superintendent of schools, who was not 1) a college or university graduate with at least one year of professional study; 2) a college or university graduate with at least two years' experience in high school work, or three years' experience in the grades; or 3) a normal graduate, classical course, with three years' experience in teaching, and who had passed before the local superintendent of schools an examination in certain groups of subjects. The first two are admirable but the third is faulty for many if not all parts of the state, in that a part of the minimum qualification and its certification is placed in the hands of local authorities when it should be left to the state superintendent of public instruction.

There is a better and simpler solution for the minimum qualification. Let the normal schools make special courses for pupils desiring to become high school teachers, examine and graduate them as such. Let the minimum requirement for appointment in any high school or high school department be this special normal diploma, based on a satisfactory examination in the science of education, the English language and literature, and two or more of the following groups of subjects, Latin and Greek; French and German; physics and chemistry; zoology, botany and physiology; algebra, geometry (plane and solid) and trigonometry; history, civics and economics.

The state of New York has in its normal schools a well equipped, admirably handled educational plant, ready with slight modifications to do the work proposed. But few additional teachers would be required, and if a summer term should seem necessary the state would be the gainer. The normal schools, by graduating some specially prepared high school teachers would soon receive entering classes of high school graduates better fitted to take professional training and profit by it. The graduate from the special course would find an imperative call for his services. Superintendents and principals would find their work much simplified when the time came for the selection of teachers, while those sections of the state which require additional qualifications would find the privilege of a farther examination still theirs under ch. 1031.

Some special minimum qualification, higher than that existing in New York state, is needed for our high school teachers. This minimum should be uniform and can be controlled and certificated to the best advantage by the state superintendent through the normal schools.

Sup't E. L. Stevens—The time has come when in our high schools a certain minimum requirement should be set for the teacher. It is an experience doubtless common to many that at the beginning of the year it has been necessary that a certain subject shall be taught in the high school, and the question has arisen, who shall teach this particular subject? In many of the smaller schools it has fallen to the teacher who has an unassigned period at that hour. The resolutions now under discussion carry a requirement for the position of principal which has not been touched on. The time has come when in the cities and villages of the state some educational qualification should be stated for the position of supervising principal, a position on which depends in many cases the efficiency of the schools and of the system.

Sup't Emmet Belknap—I would suggest that, as this is a matter of unusual importance, there would be propriety in some action being taken providing for the printing of these resolutions and their distribution so that we may know exactly what they contain. One reading is hardly sufficient to give them definiteness in our minds.

Voted, That the association cause the resolutions to be printed for immediate distribution.

Vice-prin. A. L. Travis—The superintendent and the principal are to a great extent responsible for the lack of progress that might be made in the work of the secondary schools. This results from not systemizing the work, putting it in such shape that the teacher may have a specific line of work to do; that the instructor in literature or history may not teach mathematics, physics or Latin; that each may have a related line of work attractive to him. Then the teacher could prepare her work specially in accord. The board of education should select teachers making a specialty of their subjects, and as a result students would be encouraged and inspired. The common acceptance of the word education is, to draw out, but I should like to give another meaning, to draw up. It was suggested in last evening's address that in order to inspire one must be able to lift up. I believe in requirements for teachers. The teachers in any large secondary school should be those who are able to lift up the students, and to do this they should be those who are at least one grade in advance of the students they are trying to inspire. Every school should have for its objective point college entrance; we should prepare our students for college work. The best practical education is based on this assumption, even if students do not reach college. Our secondary schools should have college in mind. To do this boards should employ a college graduate or one who has had an equivalent education, one who is in advance of his students so that he can lift them up, can make them feel that something is beyond the secondary education. The students who have made the most rapid strides in their work have been under teachers who have inspired them, and teachers can not inspire beyond their knowledge. This would assist us materially in advancing the work in our secondary schools and in enabling our students to get more from the 10, 12 or 14 years that they spend in our primary and secondary schools. It would fit them better to go out into life, while it would also prepare more students to attend our colleges.

Sup't John Kennedy—It is generally conceded now that the work in our schools should be done by those educated a grade above the work they have to do. In order to carry out this reform it is unnecessary that we should wait for state legislation. Each of us has a little legislature at his own home that has great power. I think the reform ought to be brought before this legislature. It would do this legislature good and the effect would be better than if enforced by an outside authority. For seven years we have required in our high school that the teachers must be college graduates. We feel better in having done this for ourselves, in having reached that conclusion ourselves than if it had been forced on us, and we are studying from time to time how we can further increase the efficiency of our schools and are very glad to know that we have the power within ourselves.

SUPERVISING DEPARTMENTS

SHOULD SCHOOLS BELOW FULL HIGH SCHOOL GRADE, JUNIOR, MIDDLE AND SENIOR SCHOOLS, BE UNDER THE EXCLUSIVE SUPERVISION OF THE UNIVERSITY, OF THE DEPARTMENT OF PUBLIC INSTRUCTION, OR UNDER BOTH?

BY PRIN. C. E. KECK, PALATINE BRIDGE UNION SCHOOL

How to save and make useful wasting energy is one of the most pressing problems of the age. The engineer is harnessing Niagara to make available but a tithe of its power. In education Fröbel comes as the apostle of conservation, urging that we direct natural activities to useful ends, making the chance, rational, and childish bustle, developmental. The dissipation of human force in the friction of industrial wars filled the prophetic Bellamy with dismay, not the least melancholy being the thought of the waste involved in the attempt to divorce two forces so mutually indispensable as capital and labor. The desire to solve this problem of preventing waste is bettering international relations; and, though a Spanish war may be inevitable and be vigorously waged when it comes, nevertheless the world will agree tacitly if not officially with the czar that reciprocity in its largest sense is more rational and economical than war.

The question before us has sprung out of the desire to solve this problem for the educational system of New York. No one doubts there is ample reason for such a desire. The overlapping of the authority of one department of control on that of the other, causing differences of opinion and conflict of interests, merits consideration. With three sets of inspectors traveling over the state to do work that one set with more time could do as well, with the loss of time and effort from frequent examinations, with the multiplication of reports, involving extra work for the schools and additional clerks in Albany, there is opportunity for a readjustment favorable to the reduction of friction and an increase of efficiency in the school forces of the state.

Founded in 1784, when no man dreamed of a school system as it exists today, the University was originally designed to be "the sole agency by which the relations of the state to education were to be conducted."[1] Specifically it was intrusted with the incorporation and supervision of academic schools and colleges. Appreciating the importance of organizing the scattered efforts at primary education, then organizing under private initiative, and of establishing other schools for the common branches of education, the regents persistently and heroically memorialized the legislature for six years, recurring to the advisability of legislative aid. "This original board of regents was the first representative body since Dutch rule to make any official or public deliverance looking to the organization of a state public school system."[2] As a result the first act of the legislature for the encouragement of common schools was passed on April 9, 1795.

The University thus stood sponsor for the infant common school system, and when the present efficient department of public instruction was instituted to take charge of its growth, this department was associated eight years with the regents in the person of their secretary Gideon Hawley, who was at the same time superintendent of common schools. Then followed 33 years of ex officio superintendence by the secretaries of state, 19 from 1826 to 1845 under the matchless leadership of secretaries Flagg, Dix, Spencer and Young. The multiplying common schools of a growing population furnished the department a widening field of supervision, and the importance of the system it controlled grew to overshadow that of its godfather the University.

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[1] George William Curtis: Convocation address, 1890.
[2] Sup't A. S. Draper: Address before State teachers association, 8 July 1890.

In the meantime some communities had developed the need and desire for a secondary school. Such demanded state aid on the basis of the public support of the school, and the union school law of 1853 was framed, providing that boards of education in union schools might establish academic departments legally under the visitation of the regents. These have increased in numbers, and under the new regents plan of grading academic schools have been coming into the University at the rate of 40 or 50 a year.[1] Hence the cry that "the regents are encroaching! where is it to end?"

With this suggestion as to the probable cause for proposing this question and this brief account of the historic relations between the two departments we pass to the delimitation of the question proposed. Since the present arrangement of academic departments is fairly represented by the third part of our question the latter becomes: shall we depart from the present system, and if so would it save energy and promote the cause of education to make a line of demarcation between the senior and the high schools, giving the former to the department and the latter to the regents? Or should all academic and high schools be placed under the exclusive supervision and visitation of the regents?

To place the three lower grades of academic schools under the control of the department would call for extensive changes in our examination system. It is hardly probable that regents examinations would be continued in schools no longer under regents control and visitation. The abolishment of these examinations in the present junior, middle and senior schools would require the enlargement of the grade examination system to cover the work of three academic years, or the establishment of a new system of academic examinations by the department. The adoption of either of these plans, far from correcting any confusion and waste of energy would only increase them. The high school course is the recognized means of preparation for college. Since this is by the terms of the question to remain in charge of the regents, the credentials in any system the department might propose must be such as would be accepted by the regents. Otherwise there would be confusion regarding the qualifications of applicants for admission to regents academic schools coming from department academic schools. The main purpose served by the solution of the question is to prevent duplication of work and confusion from overlapping of authority. When leading men in both departments admit that we are already too much examined, is there in this double control of academic work any prophecy of meeting such a purpose?

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[1] 1893-94, 27 union sch.
1894-95, 54 " "
1895-96, 51 " "
1896-97, 40 " "

Moreover, would there be any compensating gain to the cause of education .to justify the necessarily increased expenditure of force? The contrary seems true. The regents office in its long control of academic instruction can not have failed to learn the best ways of managing schools. One of the most admirable features of the University in its inspection, its methods of grading and its examinations, is the encouragement given to effort. A school may grow beyond the limits of a common graded school. It secures an equipment and provides instruction for one year of academic work. The regents officially inspect it and grade it junior. It enlarges to two years and becomes middle. In time it naturally increases in efficiency and instruction given till it becomes a senior or high school. Its progress is a normal one under regents' supervision. What good purpose could be served by debarring such a school from the manifest advantages of University control till it could enter as a full four-year school? The efficiency of the secondary schools of the state is an *a posteriori* argument for University control. Well might the motto of this now venerable institution be: *Si academias requiris, circumspice.*

It is pertinent to this investigation to inquire into the rationale of placing the line of demarcation between the senior and high schools. A man 20 years and 364 days old does not become a responsible citizen by the addition of one day. An academic school giving three years' instruction does not more truly enter the world of higher education by the addition of a fourth year. The advance of the latter to high school grade is no more a sign of regeneration than is granting the right to vote. It is a recognition of growth. Each is the organic product of a developmental past. To erect a plane of division would be a purely arbitrary act, unwarranted by reason or the educational history of the state, and unacceptable beyond doubt to the members of this body.

There is one place however where the fields of control of the two departments have a natural common boundary. Between elementary and secondary education there is a well marked distinction. If we are to draw an arbitrary line and say, all on this side belongs to the regents, all on that side to the department, why not fix it at the place indicated by reason and the history of the two departments? To the regents has always been accredited the control of the secondary education of the state. The department was founded for the purpose of looking after the state's elementary education. In his report for 1889 Sup't Draper, whose administration of the office all admire, said,

> I deem it proper to say that reflection and experience convince me that the arrangement which has so long existed in this state by which the common school interests are administered and supervised by this department and the academic interests by the board of regents of the University is a wise and useful one. Between these two classes of school work there is a natural and well defined line of separation. It is undoubtedly better for each to continue under the supervision of an authority especially sympathetic with its circumstances and calculated to promote its interests. No good purpose can be subserved by any suggestions to the contrary.

This opinion of one of our clear-thinking educators will have weight with many in this assembly. Yet for argument's sake let us grant that a strict division is advisable which shall give only the high school to the regents. But is this strict division practicable?

ranged either in separate rooms or otherwise, that such high school is clearly distinguishable and distinct in all respects from all other departments in the school" would give rise to much confusion and argument through the state, and might work some hardship. It will be no less difficult to fix this line in high schools than in middle or senior schools. And therefore we hold that exclusive regents' supervision of academic departments even in high schools is hardly practicable if desirable.

Further as a principal of one of the senior schools of the state I repel the insinuation that the latter are "only common schools of a sometimes higher grade." If a senior school is thus to be classed, why may we not put the average high school in the same category? By what prodigious metamorphosis does a senior school that broadens to one more year of academic work so differentiate itself as to merit an entire reclassification? The same subjects are taught, merely more of them, and but one more exclusively academic teacher is required. In point of real efficiency in academic work there is reason for supposing that some of these "common schools of a sometimes higher grade" are not inferior to many high schools.

The attempt to slight these schools makes inconsistent the plan which Judge Lincoln outlined. 10 years ago at the fourth annual conference of this organization the report of a committee appointed the previous year was embodied in the following resolution and was unanimously adopted:

> As the department of public instruction is the source of the regulations concerning the licensing of teachers, and as the work of training classes ought to harmonize with that of the normal schools and the uniform examinations, we think that the supervision of training classes should be transferred to that department.

Two weeks later Sup't Draper transmitted his report for 1889 to the legislature, incorporating in it the above resolution and strenuously urging the passage of a law to bring about the change therein suggested. The April 15 following brought the enactment of such a law, and the whole training class system, which had been under the management of the regents for over half a century, was transferred with its inspector to the department. It has since been one of the distinctive provinces of department supervision. That being the case it is evident that an entirely consistent pursuance of Judge Lincoln's plan of distinct and exclusive supervision would call for the transfer of training classes from regents academic schools to department academic schools. But department academic schools by the terms of his own definition are " only common schools of a sometimes higher grade." Hence we should have the anomalous spectacle of one of the greatest educational works of the state carried on by the schools he would disparage. That consistency in the plan would put the training classes into the lower schools, unprepared to take care of them, and fails to recognize the great work of the high schools, which are instructing 89 out of 95, or 93.7% of the training classes in the state this year. This is another argument against the division of supervision between the two departments.

In neither direction does exclusiveness of supervision lead to a solution of the problem. On the one hand the proposed exclusive department supervision would mean that many academic schools must give up regents examinations and all the benefits of the University. On the other hand exclusive regents control of academic schools is not a practical scheme. Such control of high schools alone, if the plan is to be consistently carried out, means that these schools lose the visits of the training classes with their inspectors, and the inspection by the department of their courses of study. On both sides the application of the new system would be very arbitrary, and would meet with difficulties.

It seems clear that our desire to save energy and to benefit higher education will find fruition not in severer distinction but in unification. " Consolidate! " it is the cry of the age, shrill harmonic of the slow-throbbing note of a vast and resistless revolution, which is sounding, to humanity's blunt sense all but unheard, its mind engrossed in other things. That cry goes not unheeded in our own school world. The township system is an evidence, and that is merely a broadening of consolidation already begun in many union school districts. Sup't Skinner in his last report advocates an important form of consolidation of school interests and forces, when he recommends an effort for the organization of one general association of the educators of the state. Sec. Dewey in the '97 regents report declared that the causes promoting the growth of cities at the expense of the villages and the country, will stimulate the growth of the great universities till we shall soon have 15,000 or 20,000 students concentrated at the great educational centers. Consolidation is certain to come everywhere, and not last in the two heads of our school system. "Learn to influence what you can not prevent," is a good saying whose fitness is here unmistakable. In view of approaching legislation, it is the duty of this conference to declare its opinion as to methods of consolidation and to use its influence to secure the arrangement it desires.

It is not within the range of this paper to suggest reforms. I fear that much I have already said may be not so much to the question proposed as to the larger question underlying it and of which it is the suggestion. In answer to the question on the program, my conclusion is that exclusive supervision of schools below full high school grade by either of the departments, is impracticable on the basis of the present relations between them; and that these schools should remain as they stand today till such time as the desired consolidation of these departments shall be effected.

Prin. G. E. Baldwin—The suggestion made by Judge Lincoln at the last University convocation to the effect that schools below full high school grade should be put under the charge of the department of public instruction, is dangerous to the smaller regents schools and to the entire scheme of rural secondary education in general.

Let me take my own locality as an illustration and give what I believe would be the result if the supervision of our union school were changed in the manner proposed. I do not wish to speak concerning the mixed supervision implied in the words "or both." It would be the entrance of the camel's nose (I ask the department's pardon for the comparison) and in course of time the department would occupy the entire tent and University supervision would be a thing of the past in our senior, middle and junior schools.

Against such a change of supervision, my own locality and nearly all the places more or less under like influences would be inclined to protest vigorously. Why?

It would be a change from something we know and welcome as good to something of which we know little. Whatever might be the system devised by the department for the government of the schools thus brought under its care, one thing is certain, it would not, could not be better than the present system. From nearly the beginning of its career the University has had under its supervision schools like the one I represent. When it has proved by long years of successful management that it is capable of aiding and supervising such schools, why should it cease to exercise such supervision? However good the rule of the department might prove to be, I do not believe that its influence could equal that of its predecessor except perhaps after a long term of years, and even then

> There would be doubt, hesitation and pain,
> Forced praise on our part, the glimmer of twilight,
> Never glad confident morning again.

I do not believe such a change would be just to the rural schools of the state. Many of our schools no doubt would make efforts to raise themselves to full high school grade. A few would succeed, but many simply because of their environment would fail in a little while. And many more, my own among the number, would be obliged to pass directly to the supervision of the department.

This would not be good for us nor for the school system of the state. Sometimes I wonder if many of the principals of the larger schools of the state, if most of the men in high authority in the University and department know what the word "regents" means to the teachers, scholars and communities in the rural districts. I do not think the city principals realize what is given us by those examinations and that supervision. I believe that an academic diploma gained in one of the rural schools means harder work and more self-denial on the part of the pupil if not the teacher, than it does in the well equipped city schools. I believe that the larger and better equipped schools of the state could better afford to lose University supervision than the smaller schools and that the surrounding localities would feel the loss less.

Take away University supervision from the smaller and weaker institutions and the feeling will take possession of the constituents of these institutions that they are not considered fit to be ranked the working of the two associations should aim at the same end, the improvement of the child, and to this end we are in hearty accord with the sentiment expressed in your greeting, that the whole should be under one administrative head, that we may all work to one grand purpose, the improvement of our schools.

In former years your association has done much in the interests of secondary education and we trust that your session this year may be productive of even better results and that both associations working hand in hand may do that which is best for the rising generation.

Wednesday afternoon

GROUP MEETINGS

CORRELATION OF SUBJECTS IN GRAMMAR GRADES

WHAT SUBJECT-MATTER IS OF MOST WORTH IN TEACHING GEOGRAPHY?

GROUP MEETING I CONDUCTED BY PRIN. JAMES WINNE, POUGHKEEPSIE HIGH SCHOOL

Prin. T. H. Armstrong—I understood that one for whom I have the greatest respect, Dr Shaw of New York city, would lead in the discussion and that I was to follow. However, the subject we are to take up this afternoon is one that I have been deeply interested in for several years. I am a believer in correlation. I am a believer in it from the philosophical and from the practical point of view. Some teachers scoff at the idea of correlation and yet I find that they are using correlation in their every-day work in the schools. The first general principle is that every idea entering consciousness is apperceived through the process of correlation, whether the teacher understands this or not. The child's first ideas of color, his first ideas of sound and of the different qualities of matter are all apperceived through correlation. If this is true—and it may be a matter for discussion—if this is a process necessary to the child, is it not a necessary process in teaching? If we must observe the laws of the mental processes of the child in correct teaching, the teacher must use correlation.

Educators of the country are divided in their opinions as to methods of correlation. We are told by some that we should take as a subject of discussion for a certain day the pine tree, the goose, the dog, the stars or something of that sort. This may be well so far as it goes but it is not wise or practical in our schools at the present time. We must select from our course of study some subject in the grammar grades which joins to best advantage with the other subjects of the course and is easily correlated with them, and with this as a guide the teacher can easily correlate most of the subjects taught in the grammar grades.

I suggest geography as the subject best fitted for the center of correlation. Why? Because we can not teach geography without touching history, literature, government, thus bringing in a large group of subjects now taught in our grammar grades. The result will be that the teacher who brings these subjects into correlation, suiting them to the mental development of the child, will have a variety of subjects grouped round a central point, and the child in recalling one incident will recall many, and thus will have resources by which a certain definite point of location may be brought clearly into mind in the future. For instance in the study of geography suppose we are teaching location and the location is that of Tarrytown or of the Hudson river. We recognize the fact that there are many things connected with Tarrytown of a historic and of a literary nature. I was taught merely that the place was located on the Hudson river and afterwards when I came to study history I learned something about the historic events connected with it, and still later when I came to learn of Washington Irving I learned something more about Tarrytown. I could have been given all these facts as easily at one time and I would have had all of them in mind and could have used one for the purpose of remembering the other. But you say it is impossible to cover the whole field of school work in this way, or that we have no teachers capable of doing it. We have found that it is not a difficult matter to get them ready to do it. I have worked on this scheme to some extent and believe, when teaching location in geography, in teaching not simply that China is in a certain part of the globe but that the child's interests are with humanity, that the child is interested in what men are doing, in the movements of men and in what is being accomplished. The child's mind is interested in primitive man because he lived like a child. Beginning with the myths or mythology (for mythology is primitive history), with literature (for mythology is primitive literature) we are not only teaching the child geography but are creating in the mind of the child a lasting taste for history and literature. Thus we can develop an interest in the child which will stay with him and give him a reason for learning location. There are those who say that location should not be taught; I have heard it said in our meetings that it was an educational crime to teach location, but it seems to me that it is far from an educational crime, for location is an essential part of human knowledge. I believe therefore that it is possible to correlate language, history, civics, nature, literature and even drawing with geography. It may also be possible to correlate arithmetic but thus far I have not been able to do so successfully.

Sup't Jay Crissey—I attended the old district school and I presume most of you did. You remember as I do the first class in the morning. We came out to read that the others might have time to study their arithmetic. We read some extract from the English classics, something of no special interest to us. We read it because it was in the book. After that we went back to our seats, worked on longitude and time and by and by recited that. About the close of the recitation in the English classic we reached a point where we were really interested and wanted to go on. We tried to work up some enthusiasm over the arithmetic and at the close of the recitation we had a good deal of interest in that. We went from that to find the location of 10 or 15 rivers and cities in China, not that it had any relation to what had gone before, but it was in the book and we took it. After that we had a page in somebody's speller, we wrote in the copybook that "Honesty is the best policy," and at the close, feeling that we were honest and that it was the best policy to go home, we went. A change is all right and there is a certain amount of interest to be derived from changes, and yet if as Prin. Armstrong has suggested, we had begun the day's lessons with the Hudson river, its geography, its history and its literature could have come in one after the other, and, if we had gone on through the day studying that valley, studying it perhaps day after day for a week, we would have had greater interest, school would have been much more pleasant and our work would have been better. The great difficulty connected with correlating the subjects of the grammar school is the correlation of arithmetic. I have worked hard in an attempt to correlate arithmetic and I can not advise anybody to continue the attempt. I had an opportunity a few years ago to teach in the Cook county normal school. Despairing one day of correlating arithmetic naturally, I asked Col. Parker's help. He told me that he expected a century would be required before a successful correlation of arithmetic was produced. As I had an idea that my business was to teach in the present and that matters 100 years from now will not be much influenced by my presence, I concluded that the correlation of arithmetic was not a problem for me. I suspect we are asking for more arithmetic in the schools than we should require, but we are doing that because the whole country expects it. Whether we agree or not we have to do it at present and we can not do it in connection with the story of Rip Van Winkle or in connection with the Hudson river valley, its literature or its geography. The attempt would result in such work as that in a lesson planned by a pupil teacher in the Cook county normal. She had tried to correlate arithmetic with physiology and her subject was the human body. After a good deal of work on the skeleton she finally asked, if each bone of the skeleton measured the length she gave, how long a line would be made if the bones were strung out end to end? Then came the question, What would be the advantages and disadvantages of such an arrangement? As the lesson was never allowed to be taught in that form the answers were never received. I have seen much correlation of arithmetic which was of that nature. After the school has had a lesson on the Hudson river it will do it no harm to have a straight lesson in arithmetic. The teacher who can teach on lines of correlation and do her work well is very rare. As some one said this morning, her license is certainly from the highest possible authority. If you have such a teacher the results will be good. I think the enthusiasm which can grow out of work in correlation in the grammar grades, with the teacher and with the pupil, is worth all the time and all the trouble it takes, and it requires much of each. But first of all and above all the supervisor who attempts to correlate his work must see that his teachers are really with him; if they are not he wastes his time. But if you have a few good teachers who are working with you, the others will soon swing into place, and the work will be good. I know a school which correlated its daily work, choosing for each day's work a topic in geography, history, English literature or science. The teachers planned a month's work in which seven days' work was based on geographic topics from the course of study laid down for geography, seven days' work on historical topics, four or five days on science with a day or two of review. The literature was correlated. As the different lessons were planned for the day, if the topic demanded any direct observation, that observation was planned to begin the day's work so that the child might begin with the object or with that which represented it. Then came the drawing or modeling exercise or some form of representation which induces close observation and is most excellent training. That was followed by the seat work, perhaps a description based on the observation. The real spelling work had to be planned for at this point. The new and the difficult words were put on the blackboard and became later in the day a formal spelling lesson. This required that the teacher should carefully plan her work for the day, but the results showed that in interest aroused and in work done correlation is a valuable aid in education.

Prin. A. K. Hoag—I certainly believe in correlation. As was suggested by our first speaker, I believe that very few of us are teaching today who are not using more or less of it, perhaps unconsciously. We can not teach without correlation. But that kind of correlation and the kind that means a correlation of studies after careful thought and study of the subject of correlation itself is another thing. We have been talking about the subject of geography, and as has been said, I know of no other subject where so much can be taught without being accused of going out of the subject in hand or getting away from the text.

But for instance the teacher in elementary or advanced drawing certainly can never teach drawing rightly unless she also teaches a great many of the fundamental principles of geometry—of constructive work in geometry. The teacher who teaches elementary arithmetic and teaches it properly will bring those pupils to the point where, when they begin the study of plane geometry a great many of the principles will sound familiar. I believe in that thoroughly. The teacher who is teaching a class in grammar has an opportunity there to do a great deal of work in literature. In our regents schools, as you know, there is a certain amount of required reading, certain books to be read and to be analyzed, so that the pupils will have a good knowledge at least of one or two or three books in the elementary English course. Now I am afraid that many of us are inclined to do the prescribed reading and stop there. The very best work that it is possible to do in English is to make these children just as familiar as possible with all or as many as possible of our best works. It is our association that makes us what we are. Hereditary disposition has very little influence over us in our school work, but the association with the boys and girls, with the teacher, but above all with literature, our association with books. Now in English literature there is an excellent field. I do not know whether in a class in elementary English we could follow the geography, I am quite certain that we could not bring in a great deal of arithmetic, unless we brought in the number of feet to a line and the number of syllables to a foot, but in all of the various subjects we can cover a great deal of ground. Suppose we hew to the line and follow certain textbooks and certain grades of work, the pupils may pass the examination all right but they will have very little knowledge after all, and the boy or girl that goes to our schools and follows textbook work with nothing from the outside put into that work has my sympathy when he or she gets out of school.

Prin. W. L. Millias—Much more is demanded today of the teachers and many new subjects are added to the curriculum. Nature studies, child studies, physiology, drawing, correlation and fads without number are dinned into the ears of the teachers, and foisted by them on the pupil. But when the boys of today come from the district school to the union school they can not do so well as they used to do when coming from the old district school.

There is or should be a faculty in the mind of every man which will teach him to correlate things that should be correlated. Everything will be set in its place and all will be correlated by good old-fashioned common sense into a sound education that can be used whenever and wherever it is needed.

Sup't Jay Crissey—As one who for four years taught in a district school I know that it is impossible for the district school with all its various grades to attempt such a thing as correlation. This is a condition which can not be helped, and whenever we find a boy who comes down and cleans out the union school we all rejoice and take him to our hearts and wish there were more of him.

Prin. A. K. Hoag—Some of the teachers in our primary schools have a great amount of labor given them. The number of classes should be decreased. Much of the problem can be solved and much labor saved to the teacher as well as to the pupils by correlation in these grades. The place to correlate is in the primary grades.

Prin. T. H. Armstrong—No one desires to speak in disrespectful terms of the excellent work which the district school has done in the past. What we want to know is whether there is something better, and if there is something better we want it. I know from some experiments that correlation is possible in the district school and that it is possible to save a good deal of time and effort. The gentleman who has spoken has met a teacher who undertook correlation without having studied it, and it is not a wise matter for a person to begin correlation till he knows what it means. When you understand how it should be handled you will find that it will add immensely to the child's interest and understanding, and you will have eventually high school pupils who are capable of thinking understandingly. It has a very strong tendency to abolish this everlasting desire in the minds of the children of the fourth and fifth grades to take hold of a low class of reading, and you who are teaching in the public schools know something of what that means. When a boy has learned to read he wants to read and, if the teacher is not competent to guide that desire correctly, an influence on his character will result which will drive him to ruin. I believe it is possible for us through the process of correlation so to arrange our courses of study that it will be no harder for the teacher, much easier for the pupil, and that more will be accomplished in a given length of time than is done without it.

Prin. L. H. Tuthill—I have been much attracted by the beautiful theories of correlation. When the idea first presented itself to my mind I said, "This is the thing for which I have been looking." But as I have studied the subject two thoughts have presented themselves to my mind; the first is that correlation depends on relation and that, unless there is a natural relation between the subjects, our correlation is forced and unnatural. If we have a piece of literature to study in the grammar grades which has no reference to geography, it can not be correlated in any way with geography, but if it be a piece of literature with such references correlation is demanded by the nature of the subject. When such is the case we should strive in all possible ways to relate one subject with another. The illustration given in regard to the correlation of mathematics and physiology illustrates my point. It was an attempt to force a correlation where the necessary relation was absent. Do not let us be misled by this idea into thinking that we can or ought to force everything that we are going to teach in the schools into a close relation with every other subject.

My observation leads me to conclude that children learn most readily when no attempt is made to correlate everything. Before they go to school they turn their attention rapidly from one thing to another and are constantly learning in a wonderful way. I do not say that the formal process of education should do nothing more than follow nature, but I ask, Would you like to be held every day for six hours to the consideration of one subject, first making problems about that subject, then reading about that alone, then drawing about that alone, and then spelling about that alone? You would soon become tired of it.

Prin. C. A. Black—The last speaker says correlation depends on the subject. I think that correlation depends on the correlator. The finest example of natural correlation that I ever saw was down on the coast of Maine where they raised the finest scholars in geography, and the correlation came from the location. The first year I taught there I called one evening at a pupil's house and found the family extremely animated and happy. They told me that Agnes had just received a letter from her husband through the owners of the vessel saying that the vessel of which her husband was the captain had received orders to go to Manila. The vessel was then at Hong Kong. Is that reason for happiness to your mind? It was not to mine. However they reasoned it out in this way (and this was the natural geography, the geography of correlation): If the ship goes to Manila she will load with hemp. If she loads with hemp she will come to San Francisco, the only port on the Pacific ocean where rope is manufactured. If she goes to San Francisco the captain will cross the continent and come home. His wife had not seen him in three years. I went down town the next day and the first thing the postmaster said to me was, "The captain has just been sent to Manila, he will be home in three months." Something of that sort can be done in geography. The natural association of lines of trade can be made clear. Along the coast of Maine where the people go down to the sea in ships they know ten times the geography we do in New York with all the improved teaching we have in this subject.

The teacher who correlates must not wander. That is the only practical defect of the method, and I wish to caution all those who attempt it lest in correlating their subjects they ramble from one thing to another. To that end I believe that the teacher who undertakes it needs a wider training and more knowledge of books of travel and of history than the average teacher in the lower grades possesses. The failure of correlation in practice can be traced to that source rather than to any other.

Prin. G. W. Pye—Has Prin. Armstrong noticed in the matter of correlation that it has developed into concentration on the main subject about which he is correlating? For example he takes geography as the main subject about which to correlate. Does not that method of correlating induce concentration on that subject rather than a true correlation about that subject? Have you ever discovered that it did that?

Prin. Armstrong—It will depend on the teacher. It may. If it is not very carefully done it may happen. I have found two instances of it, but it is not a terrible fault if the subject is carefully watched and guided.

Prin. J. E. Dewey—I have a bit of experience and a confession to offer. Years ago when I was teaching more geography and more arithmetic than I knew how to teach in the time allotted, it occurred to me one day to direct my class to make an alphabetic list of the states in the Union and to indicate in a column after that column of names the ratio of the areas of those states as measured by that of New York state. There were some differences of opinion about that arithmetical list which a little discussion straightened out. We had a good time over it and finally decided to transfer that list to our blank books. By and by we referred to it again and reduced all those fractions to other fractions and placed the results in another column and later we made another column changing them to decimal fractions and later made another column and gave approximate figures for that. I found that a profitable scheme. We had a good time, the children enjoyed hunting up their examples and we used the list in many other ways. This is my experience. My confession is that I was correlating and did not know it.

Prin. E. J. Peck—There are two words in the English language that I think I have never before spoken aloud and those are correlation and apperception. I manage somehow or other to get around them. I like what has been said here very much. I recently heard a teacher of the fifth grade (and it was her first term in teaching) conduct a class exercise in geography of China. The class came in with bright eyes, prompt, full of fun and interest. The teacher asked questions and listened for the answers and let the children tell what they knew. There was a constant strife for the privilege of the floor that would have been interesting in a well ordered discussion by older people. She found that they studied the lesson assigned and then asked their fathers and mothers and the story books to tell them something about China. Those children were doing the correlating themselves. They took the things that naturally belonged to the subject and tied them together. Give the children such instruction in any subject as will cultivate the habit of putting together things that naturally belong together, and with wise direction they will naturally acquire breadth and clearness of thought and expression as well as a thorough knowledge of the subject.

Prin. E. A. Frye—I should like to connect the work of this hour with the work that you have been doing. I believe that there is a correlation in geography, but I do not believe that geography can be made the center of all study. When you are teaching geography I would suggest that you bring into the study every other subject that will help the geography. When you are teaching history bring into the study of history every other subject that will help the history. Let your center of thought change. Now it is mathematics, now language, now history. Strengthen each one as you go along by drawing in all the others. That seems to me the central thought of true correlation. This is the principle with which we will take up the subject of geography.

Geography is a young science, only a little over a half century old. Let us trace its origin. The birth places of civilization were around the eastern end of the Mediterranean sea and the Persian gulf. From these centers went out the traveler, the soldier, the ailor and, returning, all brought back stories of what they had seen. Into that great center of learning came a great number of facts, but facts do not constitute a science. There is no science in nature; or example, there is no science in plants themselves. We discover n nature the facts, relate those facts and the science is born in the brain. All science is in the mind, the facts are out in nature. And so the mere gathering of geographic facts did not constitute the cience of geography. It was only after Marco Polo had sailed ound the southern point of Africa, only after Columbus had crossed an ocean, only after Humboldt had come to America, that it was possible for the great master mind of Carl Ritter to go back through he ages and gather up the threads of past research and weave them nto the science of geography.

The central thought of modern geographers is the why in geography, not the where alone but the where coupled with the why; not the how many, but the how many with the why for it, n other words, the reason in geography. Let me give a few illustrations.

Go with me to the eastern side of Asia. Go up the Hoangho or the Yellow river into its middle basin. Look over that great plain and learn that 50,000,000 people make it their home. This is the fact, now comes the why. For long ages the winds have carried fine dust or loess from central Asia to the valley of the Yellow river, and with it has filled valleys, buried hills and changed a rugged country to a plain—a plain of deep, rich soil in a moist, temperate climate. Here we see the basis for abundant vegetation. Where the streams have cut valleys in this plain the firm soil rises in cliffs, and here the people have easily dug caves for homes. Thus the region gives all that is necessary to support a dense population. We see the why.

Now go down to the mouth of that Yellow river. There we find a plain covering about 200,000 square miles, and about 300,000,000 people have made their homes on the plain. Now comes the question why? We know that the soil is brought down by the Yellow river from the great plain above in its middle basin. It must be fine soil, as we may know by looking at any little pool in which mud has settled. Canals can be easily dug across it. Communication is cheap between the various parts. Thus the people find it easy to raise food, build their homes, and travel, and so a large part of the human race dwells in that part of the world. That is the why, and added to the old geography the why has made the new.

You will observe that when you have learned one fact of a class you are prepared to have the children go out and study all the facts of that class. For instance you have explained to the children how one delta is formed, perhaps the delta of the Nile, and you go from that to the delta of the Ganges, the Po, the Rhine, or the Mississippi. In teaching one thing, one of a class, you are leading the children all over the world to the group of forms of that class and leading them to an understanding of the why in geography.

Take the maps if you please that have been distributed and turn to the last page, the small map of the United States. In the center of the map you will find the words "Red river of the north." Having looked at that turn to the large map on the inner sheet and you see in very nearly the central part of our country the great wheat belt.

You all remember reading in your books that the land there is level, that looking out one sees a circular sky line, the horizon; that it is impossible to find a stone large enough to throw at a bird; that it is one of the best wheat regions in the world. Now the why for all that. Take any little pool that forms here after a rain and it illustrates the why. Just as the little pool gathers in mud from the rill, as the mud in drying leaves a smooth surface of fine soil, so in the northern part of our country and in Canada beyond there once stood a great lake, and the rivers carried soil into that lake and the soil was deposited on the bottom, and then the lake was drained away just as the little pool may drain away. Thus no more difficult explanation than that, the mere showing of a little pool after a rain storm, is needed to explain why the plain of the Red river valley is a great wheat region, i. e. it is an old lake bed. It has good rainfall because it is in the belt of westerly winds. You can understand why the sky line is round, why there are no stones there, and all that you observe in the little pool in the street you apply to the great plain out of sight. When you have taught one region of this kind, go over the world. There are the plains of Hungary. All over our own country there are many of these lake plains; all over Europe there are many, all depending on the fact that water once stood there. You may call this geology, you may call it anything you please, but if it explains the geography bring it in, if it does not leave it out.

Turn again to the little map of the United States and find the Columbia plateau. Turn next to the large one which brings out better the plain where the Columbia river makes the bend to the north. I know that as a child I was greatly puzzled when I read that in the northwestern part of our country there is a vast area almost a desert. But the explanation is not difficult. If the child has seen molasses candy poured into a pan to cool and harden he is ready to understand how the earth can pour out molten lava and it can cool and harden. So from molasses candy we apply the principle to the northwestern part of our country and tell how the old earth let the lava flow out from huge cracks and fill valleys, bury hills and rise high on mountain sides. You can see the beds of lava where the river has cut through. But because it is hard lava very little vegetation grows there. But if we were to go from that region to southern India, we should find there an area formed at the same time and in the same way as this in our own country, an area fully as large, covering 200,000 square miles or more and supporting 100,000,000 people. But heavy rains fall on the lava plain in India, grind up the lava and thus make fertile soil. The people there can raise the products of the tropical region, while the mountains of our own country shut off most of the rain from the lava plain.

Turn now to the southern part of our own country, to the coast plain stretching around from New York to Texas, the portion lying between the so-called fall-line and the sea. Shall we say to the children that this is a plain, that it is level land? It is not level land. It is comparatively level, but shall we say nothing more to them? Let us say nothing more unless we have a reason for it. By and by we come to the distribution of building stone, and we find that no granite, no marble, no crystalline building stone of firm texture is found in that area. Why? We find no gold in that area, no silver. Why? We do find good sand for making glass. Why? We do find in the rainy season miserable roads in some parts and good roads in some parts. Why? The mind of the child is asking all along the line why this? and why that? If we can explain to him in a simple way ought we not to do it? Suppose we take a pan of water and stir in it a little mud. Let it stand and settle and then raise one side and let the water run off till part of the bottom is exposed to view. Tell the children that in exactly the same way the rivers flowing into the sea leave the mud on the bottom. For some reason the sea bottom along the shore was lifted up and formed dry land. Let the child know that it came up from the sea. Why let him know that? Because knowing that fact is the answer to all these "why's" we have had. If the child sees the sediment settle in the bottom of the pan, he can understand how the sediment at the sea bottom can be laid down and how under great pressure the layers can be made firm, and possibly if we go down deep enough we would find sandstone and perhaps some granite or marble. We know that in the salt water of the ocean are found the various minerals, and that when the sea deposits a sediment these various substances are deposited with the sediment, and all over this plain, deposited by the sea, we find traces of gold, silver, iron, copper, zinc, etc. Why then are there no beds or large veins of minerals? Because there has not been time enough to gather them together. It takes long ages for the waters percolating through the soil to gather together the iron in this place and the gold in that. And the child is made to understand all this by the mere puddling of a little pan of water. Correlation says, " Bring in any subject if it will help the geography, provided it is simple enough for the child to understand."

There is as much reason for teaching the why in political geography as in physical geography. We read in our textbooks that Chicago is the greatest grain center, the greatest railroad center, the greatest lake port, and that it manufactures a great deal of steel and iron. The mind asks why? If the child can be led to understand the why the understanding will aid the memory. If he gets the reason for the fact his memory is aided and much time saved. Is it not easy to tell the child of the great forest growth on the Great lakes, and then let him see that Chicago is in the very heart of the lake region. If in his mind he goes up to the iron region and then down to the coal fields, is it not an easy matter for him to see that the coal and iron routes meet at the foot of Lake Michigan? Today Chicago ranks second only to Pittsburg in the manufacture of iron. Is it not easy to understand how the railroads coming from the Northwest must go round that lake; that the lines converge at Chicago and that therefore it has become a great railroad center? In other words is it not an easy matter to see that a city grows up just as a flower does on the prairie? We get the fact before we get the reason for the fact. This is the intelligent teaching of geography. I need not carry this any farther than to say that if I were teaching about New York, I would mention what has led up to New York, the Erie canal, etc; Liverpool, that it is so near the iron region and is the most convenient port for American commerce; and so on round the world with each city that is worth teaching of, and these reasons should be given. The reasons underlie the teaching of modern geography.

We read that good harbors abound on rocky coasts, poor harbors on sandy coasts. Turn if you please to the large map. Begin on the western coast at the mouth of the Columbia river and travel southward, always in sight of the mountains. Where do we find the first harbor? At San Francisco. The next is away down near the Mexican boundary at San Diego. In a stretch of more than 1000 miles there is only one good harbor. But continue southward down the western coast of South America. Now turn to our own Atlantic coast, and traveling from New York southward we find more harbors along that sandy eastern coast than on the whole western side of North and South America from the Columbia river to Chile. The simple principle underlying this fact is this: Where rough land has settled, letting the water come into the valleys, we find good harbors. Where smooth sea bottoms have been lifted up we find poor harbors. If these sea bottoms, after having been lifted up and worn into hills and valleys, have settled partly down again, good harbors are formed. Thus it has been with our eastern coast, the rough land has settled there, letting in the water and forming great bays. The great seaport harbors of the world, as far as I know, are what we term drowned valleys, i. e. valleys that have partly settled beneath the sea. If the child can understand by pouring a little water in a pan how these harbors are formed, there is no harm in showing him. Call it geology, call it anything. If it is something that can be correlated, something that will explain the geography, bring it in. But some will say, this is more a matter of physical geography than of political geography. I think that criticism is easily answered. If political geography would teach simply that Chicago is a great railroad center, a great grain mart, and say nothing of the reasons therefor, such geography is practically worthless. If on the other hand it is of value to the child to explain to him the physical surroundings of the city and so lead him to understand the reasons for these facts in political geography, there is great value in that. It is intelligent understanding. I would teach political geography with the reasons for facts. If the reason happens to bring in physical geography, put it in. On the other hand, if it brings in history or literature, put them in. I do not know how to separate them. I would teach the political geography always coupled with the why for the fact.

Turn to the study of life. I want to illustrate briefly how by taking a few physical features and making them the basis of study you can save weeks and months of time. I take the oceans, the desert of Sahara, the plateau of Mexico and the plateau of Tibet. We all agree that these are physical features well worth teaching. The bugbear of this work to me was the study of the distribution of parts of races, of governments, of religions. I could not remember which of the countries of the old world were absolute monarchies, which were republics; which believed in Mohammed, which in Buddha. It finally dawned on me that these few physical features controlled all that. We sometimes see in our geographies a picture of the animals, say on one page of Europe, on another of Africa, on another of Asia. As a matter of fact the animals of northern Asia differ more widely from the animals of southern Asia than do the animals of North America from those of Europe. The dividing lines in the distribution of life, of plants, of animals, of races, of governments, of religions are found in the great physical features to which I referred. The animals of South America are free to roam north till they come to the plateau of Mexico; this they can not pass unless their food grows on it. Those north of the desert of Sahara can not as a rule go south of the desert. Of course man can carry them in; but native to southern Africa we find no bears, no cattle, no horses, none of the more common animals of our northern regions, because the great desert has been the boundary line.

These structural lines have affected the distribution of man. Take the countries south of the highlands of central Asia. No matter what the countries are, as the child studies about them the thought occurs to him, here is a great country south of the plateau, the home of the white race, and the white race stretches northwest to the ocean, southwest to the desert of Sahara. Now go to America and simply say that the natives belong to the red race, and then north and east of the plateau of Tibet, the people belong to the yellow race. South of the Sahara desert is the black race. On the islands southeast of Asia the brown race. How simple it is.

The governments are characteristic of the races. Why take up each political division when as a matter of fact the yellow people have absolute monarchies, Japan excepted. Why puzzle the children over memorizing the same fact for a great many countries when you can say in one word that the yellow, the brown and the Semitic branch of white people have absolute monarchies, with few exceptions. South of the Sahara desert we find the tribal government. Finally as regards the white people there are two great branches. The governments of the darker branch are absolute monarchies. In the new world all are republics except the few portions belonging to Europe. The government of the brown race is an absolute monarchy. It thus becomes a matter of association of government with race.

Take the subject of religions. When I say brown people I might as well say Mohammedans. When I think of the black people I think of the tribal form of government and with it idolatry. These great structural features, the mountains, the plateaus and the desert, if made the basis of our teaching, will save much time, and will lead the children to study the distribution of races, governments and religions from an intelligent standpoint.

The question rises in regard to new work in geography, how to handle the topics. Shall we go back to our old questions at the bottom of the pages, or shall we go on and teach the child to read literature? There are no questions at the bottom of the newspapers. I have placed in your hands to illustrate this point text on the American or red race. It does not matter what the book is or what the subject is, the method will be the same. Perhaps you say, Why shall we give them a topic? Are there topics in ordinary literature? Yes. Take the magazines. You run down the table of contents. Here is a topic that interests you and you read that topic. Suppose we say to the children then, " Find out what the text tells about the home life of the Indians." That is they are to gather from that text all that bears on the topic assigned. For recitation they tell in their own language what they have learned. Next day give them another topic, " Find out where the Indians live." The children go at the same text, get the meat out and by the time they have studied the two topics from that standpoint they ought to know the text. By such study as this, pupils are prepared to take up the magazine article or the newspaper and read intelligently.

I want to say in regard to map work that it does not seem to me necessary for the children to be taught a country by map questions. Say to the children, " There is our country, what does the map show about it? " One child may see the mountains, another the lakes, another the rivers. Let them see all they will, and then when the interest is dying away in the general study say, " Look a little more closely at the mountains; " or " Look at the valleys." I remember with what pleasure a little girl discovered that of all these great rivers of the central plain, not one flowed into the Great lakes. That joy of discovery was worth more to her than 10,000 map questions answered from the book. Another child said, " All those great rivers flow toward the south." Give the little minds a chance to work, give them a chance to find out something for themselves.

My central thought is this: that modern geography, dating within the half century, tries to take up the subject-matter and explain to the child the reasons for the facts. We study the distribution of commercial products and we enter botany and zoology. How far? Just far enough to get at the distribution of commercial products. We take up a little mineralogy. How far? Just the commercial portion. We go into geology. How far? Just the simple parts that lead children to think for themselves about the reasons in geography. Without regard to what the science is, we go just as far out into the interpreting sciences, we correlate just far enough, to strengthen the one that we have in hand. Beyond that I do not think we ought to go. And so I repeat that I am glad that the subject of geography is presenting something worthy of our study and is reaching out every year further and further into those related subjects to explain to the child the why in geography, in order that he may learn not as a parrot but as an intelligent being.

Prin. W. T. S. Imlay—As a teacher of geography I find unfortunately that the element of time enters into the consideration of the subject, and also the ability of the child to comprehend the subject-matter presented. We have a peculiar class to deal with, children who have no facilities for gaining the information at home which Prof. Frye has suggested that they should gain, and therefore I would like to ask him how we are to get this from them.

Prin. Frye—I spent about 10 minutes trying to show how we were saving time by laying the basis in a knowledge of the structure which will enable the child in a very brief time to comprehend the distribution of plants, animals, races, governments, religions, etc. That is how the subject of distribution is simplified. From the standpoint of reason we save a great deal in time. If I lead the child to understand the reason for the fact, he grasps it once for all. The trend of my talk has been to show how to save time.

Prin. Imlay—I understand you to say that the facts must be within the comprehension of the child; but being without the comprehension of the child, how are we to give them?

Prin. Frye—In all the explanation that I gave I took nothing more difficult than the flowing of a little rill, or the pouring of water into a pan. I do not think that is beyond the comprehension of a child.

Prin. Imlay—A class of 50 pursue this subject who hardly understand the English language. How are they to understand these facts, to comprehend the explanations given?

Prin. Frye—I do not mean to say that we can simplify geography so that one who uses only a foreign tongue can thereby be made to understand the English language.

Prin. Imlay—It must have been my unfortunate experience, then, to find there are many children with teachers who have tried year after year, who do not comprehend these facts. It is line upon line, precept upon precept, and then they do not get them firmly fixed so that they give back what they should. We lead them beyond what they are able to understand, and there is the danger with the teacher. For instance take the fact of a drowned valley. Do you suppose there is one child in 100 or 1000 that can understand a drowned valley? Are you not supposing that a child 10 years of age understands as much or can comprehend as much as you do about a drowned valley?

Prin. Frye—It is not a question of reasoning, it is a question of seeing the thing in principle and applying it in nature. It is seeing the candy harden and then telling the child that the large mass of lava cooled, and I do not think there is any child five years old who can not understand simple work like that. If the child can see the muddy bottom of the little pool and then can see the same when the water is taken away, he can understand how there can be larger areas of the same kinds. If he can see a river rise or see the tides go in and out, he can understand. Give the child what he can understand and stop there. That is my plea. I do not believe in giving the child the facts without the understanding. My plea is this: Lead the child as far as you can but give the reasons for the facts. My plea is against giving the facts without a reason.

I want to say with regard to this work that I have watched the work with thousands of children. The difficulty does not seem to be with the children. I have seen teachers looking around for some simple explanation of how a lake plain is formed, when out in the school yard after a rain storm there were little pools illustrating the work. The teachers fail to grasp the little things close at hand.

METRIC SYSTEM TEACHERS ANNUITIES

GROUP MEETING 2 CONDUCTED BY PRIN. C. H. WARFIELD, LITTLE-FALLS HIGH SCHOOL

Metric system

BY PRIN. C. T. R. SMITH, LANSINGBURG ACADEMY

In the exercise of one of the powers granted by the constitution, congress has been strangely dilatory. The fifth clause of § 8 of article 1 provides that " Congress shall have power to coin money, regulate the value thereof, and of foreign coin, and fix the standard of weights and measures." Only by implication, in the provision for distributing standard copies of certain metrological units, has the last mentioned power been exercised, though it would seem that the duty of giving to the people the most stable, uniform and convenient system of weights and measures, is an important obligation on our national legislature.

Before we find fault with congress however let us teachers see if we are guiltless in this matter. I suppose that no one, who has sufficiently used the metric system in daily affairs to become familiar with it, and not much actual use is needed, will refuse to acknowledge that the general substitution of a decimal system of measures and weights for our present system, or lack of system, would be a great economic and educational gain. Though one should maintain that some other fundamental unit would be more desirable than the meter, he would probably admit that a unit already in satisfactory use by three fourths of the civilized world, omitting Russia, is not likely to be displaced. Then why has the teaching of the metric system not been more fruitful in our schools, and what measures are needed to make it more fruitful?

Except under abnormal stress the progress of all new ideas is painfully slow even in modern times. Mental inertia is the greatest obstacle to reform. This ought not to be true among teachers, and perhaps is not in all cases. Rational methods of teaching children to read for instance, have been generally adopted in this country within a quarter century, while metric reform, more needed as a time-saving device in education, has languished for a third of a century with scarcely perceptible progress. In 1866 congress made use of the metric system permissible and subsequent textbooks in arithmetic have treated it in a perfunctory way. Those who knew the educational advantages that would come from the general use of this system had strong hopes when congress legalized it that through the appreciation of those advantages by teachers and school authorities the new units would come rapidly into use. These hopes have been disappointed. School authorities have been indifferent. Teachers have generally failed to comprehend the system and have generally taught it, if at all, as a new and curious kind of compound numbers. Their pupils have become men and women feeling that the metric system was a useless addition to the burden of arithmetic in their school days. Ignorant of its merits they think they know all about it and want none of it. Thus in spite of the legislation of

1866 and the introduction of metric tables into school books, popular prejudice against foreign innovations, and popular ignorance of the simplicity and utility of the metric system, hold sway in the United States.

Even conservative England is far in advance of us. Among the bodies that have recently urged parliament to adopt for exclusive and compulsory use the system of weights and measures that would put Britain on a par with her neighbors in a matter of importance to manufactures and trade, are 20 town councils, 40 trade councils, including the London association for the protection of trade, with 4000 members, the Edinburgh merchants association, the Association of trade protection societies, the Liverpool cotton association and Corn trade association, 20 school boards including those of London, Manchester and Birmingham, 46 chambers of commerce, among them the London, Edinburgh, Liverpool, Birmingham and Belfast, and 15 other influential bodies.

English labor unions have been among the first in urging the metric reform. In September 1892, the Trades unions' congress at Glasgow of 495 delegates, representing a million and a quarter of laboring men, sent representatives to a committee of the house of commons with a resolution unanimously adopted in favor of the metric system. When asked what had induced workmen to trouble themselves about such a matter their spokesman said that "their chief inducement was the belief that it would be better for them and for their children to be taught what was simplest and best, that much of the time now devoted to weights and measures might be used for something more profitable and that as ratepayers they would get better value for their money." He added that those he represented believed that the general use of the metric system would improve the condition of manufactures and trade and would thus be of indirect benefit to workmen. That British workmen are alive to their children's interest does not seem strange when we find the National union of teachers in the list of influential bodies that have memorialized parliament favoring the decimal system. What are American teachers doing that our country should be the last of the great nations to accept an improvement that, on testimony of careful observers in the countries where it is used, would diminish one third the time needed for the study of arithmetic and do much to abolish machine work in the other two thirds?

Our motives are patriotic, as well as professional. If the United States is to lead it must not lag in adopting means to facilitate commercial intercourse, among the first being common standards of weight and measure. In 1896 Sec. Morton wrote to the committee on coinage of the house of representatives as follows:

> The almost cosmopolitan use of a system of weights and measures totally different from that employed in the United States naturally places American merchants interested in foreign trade at great disadvantage. Not only are American price lists confusing to the foreign merchant, owing to the different denominations used, and trade thus impeded, but the fact that foreign lists are made in terms equally unfamiliar to our merchants is said to result in unfair discrimination and often in fraud.

The chief of the bureau of American republics wrote to the same committee in stronger language:

> The failure of the United States government to adopt the metric system is one of the most inexplicable instances of false conservatism in the history of the country. In face of the fact that almost every civilized government has seen the necessity of a common system of weights and measures to facilitate the interchange of commodities, the people of the United States have persisted in retaining their old and cumbrous system, which might have served those who believed in non-intercourse with the outside world, but which stands as a barrier to that freedom of exchange to which the world is now tending. We send consular representatives to every quarter of the globe for the purpose of making possible an extension of our foreign commerce, and then busy ourselves in an attempt to make such commerce impossible, retaining a system of weights and measures which adds to our own difficulties and makes us mere barbarians to the more progressive nations.

In view of this testimony it seems superfluous to urge that we teachers should shake off apathy. What is needed to facilitate progress? The metric standards in each school and a metric measure in the hands of each child in every school year after the first. The English government furnishes to schools on demand free copies of the standard units. A like plan might be undertaken in New York. The state will now pay half the cost of metric standards and teaching apparatus for high schools and academies. The metric measures for children should be simple. So far as I know a suitable, inexpensive school scale in metric units has never been put on our market, and the slow progress of the metric system may be partly attributed to this lack. We need a scale of 25 or more centimeters, the right hand centimeter in millimeters, with the undivided centimeters numbered toward the left on the principle of the architect's scale. The child trained to use this measure in making problems for himself and his classmates in adding two and three figure numbers will understand his arithmetic, and when he comes to feet and inches and fractions of an inch will be an ardent advocate of the metric system.

[Here the speaker distributed specimen scales and explained their use.]

In every schoolroom there are needed for blackboard use several copies of meter and half-meter scales in decimeters with the right hand decimeter in millimeters. Each school should be supplied with an exhibition meter 2 cm square with one face plain and the other three graduated in decimeters, centimeters, and millimeters respectively. Several tin liters of cubic form, a measuring tape of 10 or 20 meters, a balance with metric weights and if practicable a loaded and dissected liter block should be at the command of each teacher. The entire equipment for a district school or graded school would cost from $5 to $15. A high school should be furnished with metric measures of precision, most of which however would belong to the outfit for teaching physics and chemistry.

With this simple and inexpensive equipment, or if this is not attainable, with home-made measures of cardboard that any teacher can make in an hour: and weights made of pieces of lead pipe and brass wire, with a new nickel for a 5 gram standard, children may be led to enjoy work in metric measures. If it is explained to them that these are the measures of the civilized world, that of the enlightened nations three times as many use these as use the English units, and that they promise to become the world measures early in the 20th century, children will become intensely interested. Aside from its importance as a matter of general intelligence and its prospective utility in practical affairs, I believe that we could profitably teach the metric system merely as a concrete illustration of the arabic notation and the methods of calculation based thereon. Its use in the early years of a child's study of arithmetic would tend to banish the mechanical "figure-work" which, as Col. Parker complains, has so often taken the place of arithmetic in American schools.

Should we not encourage pupils and teachers to become familiar with so important a matter? Besides the one metric question required in the regents examination in arithmetic, two or more of the optional questions should involve metric quantities. The system should be used exclusively or almost exclusively in the data of examinations in physics and chemistry, and for question papers in mathematics and the sciences. The department of public instruction should require a knowledge of the metric system as a prerequisite for teachers certificates of all grades. Teachers ought to be intelligent regarding a matter of world wide interest specially now that we have adopted the expansion policy. Our new possessions in the West Indies and the far east, backward as we justly consider them, are before us in this respect. Great Britain and Russia are practically the only nations besides the United States in which the system is not used. The former is aroused to the need and will undoubtedly act soon. The latter has already made the use of the metric system compulsory for physicians and druggists. Shall this country close the rear in the march of metric reform?

Prin. J. C. Norris—In occasional visits to teachers institutes, the metric system is one of the subjects on which I have always chosen to speak. I have found the most astonishing ignorance among the teachers of the state. I have asked those teachers who felt that they understood the metric system and were capable of working an example in it, to raise their hands, first giving them notice that I would not ask them any questions. The percentage of district school teachers was less than 2%. Many times in an institute of from 100 to 150 or more, only one or two professed to know anything about it. As long as our government is so dilatory about taking hold of this problem, it seems to me that we as teachers should voluntarily take hold and do all we can to extend the knowledge of it. You are all familiar with the fact that if we used the metric system in preference to anything else the school life of the child would be shortened. I do not mean his mathematics alone, I mean that his whole school life would be shortened at least one year. In other words, the eighth grade pupil would be doing what the ninth grade pupil is doing now.

I do not think the regents have done enough in this. I think more questions should be put in both the regents and the uniform examination questions.

Metrological reform

BY PRIN. J. S. TAYLOR, NEW YORK CITY (MANHATTAN) AND EDITOR *N. Y. teachers magazine*

Our textbooks used to tell us that quantity is of two kinds, discrete and continuous, that the measurement of discrete quantity gives rise to number and its science, arithmetic, while continuous quantity leads to geometry. Recent studies in psychology have led to the conclusion that there is no essential difference in the subjective aspect of these forms of quantity.

Mathematics is the quantitative apprehension of the universe, the essential element in it being the mental measurement of an indefinite whole or unity by the application of a definite known unit to see how many times such unit is contained in the mass to be measured. When the unit is inexact we call the process counting, when the unit is exact we call it measuring, but psychologically there is no difference. Counting eggs is measuring an indefinite mass, measuring the length of a room is counting the number of units of length it contains. All forms of measuring may be reduced to length, mass or time. It is length and mass that we are concerned with in this discussion, and whose mode of measurement it is proposed to reform.

The constitution of the United States says congress shall have power to regulate weights and measures, but there have been few laws on such regulation though the need of reform has been repeatedly recognized by congress. Whenever an attempt is made to abolish our complicated system, the conservatism of human nature asserts itself and prevents progress. The proposed reform is so far-reaching that every individual in the land is affected by it, and the difficulties of the change are magnified till the people are willing rather to bear the ills they have than fly to others they know not of.

At the organization of our government we had many different weights, chiefly English. In his first message to congress Washington urged the need of reform, and Jefferson his secretary of state devised a system based on a natural standard, that was in many respects better than the French system. He proposed that a rod vibrating seconds be divided into five equal parts, and that one of these parts be called a foot. This unit would be about a quarter of an inch less than the present foot. Congress failed to act on Jefferson's system.

Dr Mendenhall says that in Europe there were at one time 390 different pounds and more than 200 different measures for a foot. In a book still existing there is an illustration of 16 men putting their left feet together end to end, one sixteenth of the total length of their feet, inclosed in wooden shoes, being a legal foot. Europe outside of England has seen the folly of such inaccuracy and confusion and has adopted the uniform metric system, now advocated in America.

John Quincy Adams prepared in 1821 what is declared by competent authorities to be the ablest report ever written on metrological reform, but while he was convinced of the need of a change, he lacked the courage to recommend remedial legislation. His work was thus practically a failure, though his arguments are as sound today as then.

The first act of congress on the regulation of measures and weights was passed in 1828, by which a certain piece of brass brought to this country by Gallatin was declared the troy pound and made the standard of coinage. It is pear-shaped with a removable top; within is a cavity filled with small wires by which it was adjusted to equal the English troy pound. I believe this is still the standard though no one knows how many wires may have been removed by successive superintendents of the mints.

In 1859 the legislature of New Hampshire petitioned congress to adopt the metric system of weights and measures. In 1860 the legislature of Connecticut made a similar appeal and was followed by Maine the next year. In 1866 congress legalized the French system by making its use permissive. Since there has been no legislation on the subject except by the legislatures of individual states. Such uniformity as we possess today is due to the voluntary action of different commonwealths.

Who can tell what a pound is? In some states it is defined as a mass equal in weight to a certain piece of brass kept in the state house. In other states severe penalties are provided against false weights and measures though no legal standard exists. Our national government has a pound and a foot which are legal for transactions with the United States, but an edict of the secretary of the treasury could at any moment alter the standard of weight. It is true that we have an approximate uniformity, but this is due to the manufacturers of scales who use the national standard, and thus the legal state standards where they exist are everywhere ignored. The standards of the United States are no longer defined by reference to brass and silver models but in terms of metric units. A yard is defined as $\frac{3600}{3937}$ of a meter and the pound as $\frac{1}{2.2046}$ of a kilogram, the kilogram being about two pounds. Hence we are really on a metric basis already.

Pope says an honest man is the noblest work of God, and those who know say that an honest quart is the noblest work of man, by which they imply that the quart is nearly always against the consumer. There are at least three tons generally in use, the long ton of 2240 pounds by which the dealer buys his coal, the standard ton of 2000 pounds which the consumer is supposed to receive from the dealer, and the short ton which he actually does receive.

We may thus summarize the arguments in favor of metrological reform:

1 At present there is no legal uniformity of weights or measures in this country.

2 The system in use is complex, arbitrary and ill-defined by standards.

3 Time and energy are wasted in an attempt to teach this system to school children. Tables of weights and measures constitute an important part of the course in arithmetic in all the grades of the elementary schools.

4 In spite of this large expenditure of time and effort children do not succeed in mastering the subject, so that it is doubtful whether even the average teacher could creditably pass an examination on the system.

5 The mathematic portion of scientific books is increasingly based on metric units, hence it is now necessary to teach both systems, which increases the useless burdens of the elementary school.

There are a few stock objections to be noticed in conclusion. It is said that the expense of a change would be enormous. This item is greatly overestimated. Most machinery is so constructed that a small change in the dimensions of the product would make no difference. Europe and South America have made the change and the records do not show that in any case the expense has been what the opponents of reform assert. It is said that the difficulty of a change would be almost insurmountable. This is also an exaggeration. The most conclusive answer is the fact that it has been accomplished elsewhere, and that the difficulties were overcome by nations whose average of intelligence is far below ours. The meter being nearly equal to our yard, the kilogram about equal to two pounds, these and other units serve as an apperceptive basis for the understanding of the new system.

In view of the facts it is believed that teachers have more reason than any other class of citizens for demanding metrological reform by congress.

Sec. Melvil Dewey—Probably this is the most important minor subject that comes before us in our teaching. What Mr Norris says about the ignorance of it in the elementary schools is discouraging, but it enforces the old lesson that the high schools which are training most of the teachers of the state ought to show them the proper way of teaching the international measures. My experience is that a class of bright boys or girls who have bothered their heads till they despise " compound numbers " will be simply fascinated if you put the metric system skilfully before them as it really is, calling their attention to the development of the measurement idea from the old time when the foot meant simply what the word suggests, the length of each man's pedal extremity. In those days if I could have bought by my foot and had my wife sell by hers, we should soon have gotten rich.

The measurements of the world were the result of chance. They were full of absurdities and offered a fruitful field for misunderstanding and fraud. To illustrate this point I published over 20 years ago a detailed list of two typical measures, the foot and the pound, giving the place where used and the exact measurement of the standard followed. There were 282 different feet, the shortest one 18.48 cm, the longest 64.933, or three and one half times as long as the shortest. Of the pound there were 391, the lightest being 192 grams, the heaviest 1200.1, the last weighing more than six of the first. Even this only partially illustrates the chaotic condition of measurements. In Stockholm, Sweden, they had seven different pounds with which to measure the force of gravity, running from the customs pound of 338.8 grams up to 486.7 grams for the pig iron pound, between these being the provisions, mining, city, raw copper and drug pounds. Of the 282 different feet in the table, 266 had already been superseded by the meter; and of the 391 pounds 370 had been displaced by the kilo, the most significant testimony to the marvelous power of the metric system in conquering the world and becoming in fact as well as in theory the universal standard. Even these facts convey no adequate idea of the confusion, for they are limited to only two of the numberless units. In our own country, conditions almost as discreditable were brought out by a second table giving for each state in the Union the number of pounds required by law in a bushel or barrel for 30 to 40 of the leading commodities. In some there was a large degree of uniformity; in many, variations slight but mischievous; e. g. three states in order give barley 46, 47 and 48 pounds to the bushel. While most states have 48, Arizona and Washington have 45, California 50, Louisiana only 32. Thus 100 bushels of barley bought in most states would become 150 bushels in New Orleans, where the contract would be legal by delivering 32 pounds to the bushel. With rye, 100 bushels bought in Georgia would become 175 on its short trip into Louisiana. In some cases the weights vary in the different counties of the same state. New Jersey in 1844 decreed that 55 pounds made a bushel in Salem county while 56 was required in the rest of the state. Another case showed that coal mined in Indiana required only 70 pounds, but if mined outside the state 80 pounds were necessary to make a bushel. I remember 25 years ago and more when in college boarding with a man who had recently moved into Massachusetts from New York. A farmer came around with maple sugar which he offered for a shilling a pound. It was very fine and my friend knew perfectly well it was really worth 14 instead of 12 1-2 cents a pound, so he took the whole lot. Then he discovered that in Massachusetts a shilling was one sixth instead of one eighth of a dollar, and he owned a load of sugar at a fancy price.

No intelligent man can question that even the present so-called system, relieved as it is of much of the absurdity of the past, is still only a relic of barbarism without the use of intelligence in its original standards, its nomenclature, its ratios or its relations to other measures or to other places. If few comprehend the absurdities of the old lack of system, still fewer realize the immense gain that would follow the adoption of an ideal system like the metric. I can make this plainer by some quotations than by my own statements. December 14, 1819, John Quincy Adams, then secretary of state, was directed by congress to investigate the subjects of weights and measures. He reported to the house on February 22, 1821. He afterward spoke of this report as one of the greatest works of his life, and the opponent of the metric system whose writings have done most mischief, says frankly of "the able and extraordinary report of Mr John Quincy Adams," that "He examined the whole subject with the minuteness and accuracy of mathematical science—with the keen sagacity of statesmanship, and the profound wisdom of philosophy." Certainly the opinion of one of the foremost Americans, honored with the presidency of his country, formulated after the most painstaking investigation, is bound to carry great weight. For reasons which are no longer in force, Mr Adams reported against the adoption of the metric system at that time. France, where it was first used, had after the first experiments conceded to the inertia of popular prejudice a modified law which did not make the new system compulsory. Its career of conquest had not begun, and Mr Adams had before him an inspiring ideal which no nation had yet proved to be practicable by actual complete adoption. Since this report was written the only reasons that weighed against its adoption at that time have been entirely removed. Nearly the whole civilized world has now adopted the international measures and even the few opponents of the system concede that it is impossible to stay its progress and that it is bound of necessity to be the universal system. In summing up his statement to congress of the advantages, the secretary of state said:

> Considered merely as a labor-saving machine, it is a new power offered to man incomparably greater than that which he has acquired by the new agency which he has given to steam. It is in design the greatest *invention* of human ingenuity since that of printing.

Later in the same report, with words prophetic of what we are evidently soon to see, Mr Adams says: "If man upon earth be an improvable being; if that universal peace which was the object of a Saviour's mission, which is the desire of the philosopher, the longing of the philanthropist, the trembling hope of the Christian, is a blessing to which the futurity of mortal man has a claim of more than mortal promise; if the spirit of evil is, before the final consummation of things, to be cast down from his dominion over men, and bound in the chains of a thousand years—the foretaste here of man's eternal felicity—then this system of common instruments to accomplish all the changes of social and friendly commerce will furnish the links of sympathy between the inhabitants of the most distant regions; *the meter will surround the world in use as well as in multiplied extension*; and one language of weights and measures will be spoken from the equator to the poles."

His report which fills 242 pages, closes with these words:

> *Uniformity* of weights and measures, permanent, universal uniformity, adapted to the nature of things, to the physical organization, and to the moral improvement of man, would be a blessing of such transcendent magnitude, that, if there existed upon earth a combination of power and will adequate to accomplish the result by the energy of a single act, the being who should exercise it would be among the greatest of benefactors of the human race. But this stage of human perfectibility is yet far remote. The glory of the first attempt belongs to France. France first surveyed the subject of weights and measures in all its extent and all its compass. France first beheld it as involving the interests, the comforts, and the morals, of all nations and of all after ages. In forming her system, she acted as the representative of the whole human race, present and to come. She has established it by law within her own territories; and she has offered it as a benefaction to the acceptance of all other nations. That it is worthy of their acceptance, is believed to be beyond a question. But *opinion* is the queen of the world; and the final prevalence of this system beyond the boundaries of France's power must await the time when the example of its benefits, long and practically enjoyed, shall acquire that ascendency over the opinions of other nations which gives motion to the springs and direction to the wheels of power.

One is almost startled by the strength of these assertions, but if he studies this subject deeply he finds that they were justified and were worthy of the great statesman who made them.

The money saving through simplicity in operations, we illustrated by complete figures of a problem in compound numbers stated in ordinary and also in metric measures. The first required 15 mathematical operations and 380 figures; the metric solution required but two operations with 68 figures. A careful computation was made of the business of the London and Northwestern railroad a quarter century ago to determine as fairly as practicable the saving that would result to that single road if all its way bills, records and computations were performed in the simple decimal system instead of by the complicated English methods. The saving of time was computed for the clerks of different grades. The average of this time was multiplied by the average salary and thus the statement was turned into money, and it was shown that the average annual saving at that time would have been $50,000, or $1000 a week for that single corporation.

You will hear various objections urged against the metric system, for nothing has ever yet been offered to human kind so good that some one has not been found ready to question it. Most people are of course entirely honest and well meaning but their criticisms are due to ignorance both of the theory of the system and of the history of its wonderful progress as well as of its present standing. Sometimes this ignorance is confused with lack of common honesty. I recall that in my college days I thought the New York ——— the one paper which a young collegian ought to read. I saw in it one day an editorial commenting on the agitation in favor of the metric system and pointing out that it was an impossibility, that it was useless to discuss it because a great country like Germany that had tried the experiment had signally failed; that the old measures were used much more than the metric and they had demonstrated that the thing could not be done, therefore it was idle for Americans to consider it. I wrote to the paper calling attention to the fact that the law in Germany had gone into effect a year or two before the metric system had been made compulsory and that no other weights or measures were used, and that the change had proved the entire practicability of the reform just as our resumption of specie payment was found to be the simplest thing in the world when the government had the courage simply to resume. A reply was sent to the effect that they found I was correct, but that as the paper had published the article it would subject it to unpleasant comment if it should publish a correction, and therefore it was allowed to stand. My standards of honesty were then what they are now, and I need hardly say that I have never been a reader of that paper from that day to this, nor have I ever put confidence in its statements, fearing lest there might be another case where the unwillingness to acknowledge a blunder was greater than the desire to put before the public the exact truth.

Whether the original meter was a perfect standard or whether there was an error does not amount to anything. Later investigations quite as much confirm as throw a cloud on its accuracy. Indeed Dr T. C. Mendenhall when superintendent of the U. S. coast survey pointed out officially that we have no lawful reliable stand-

And yet all over the country the children were solemnly repeating these tables when the very purpose of the metric system was to get rid of all tables and work with single units and decimals, with the resulting immense gain in simplicity, rapidity and accuracy of operations. You have seen the same process in the last generation in a partial way in land measures. It used to be chains and links of 8.92 inches each; then rods and feet displaced them largely, and they have in turn given away to feet and decimals. No intelligent engineer now thinks of using the old terms in his work. For very minute work it is convenient to have a smaller unit than the meter, and the 100th and 1000th are used with their Latin prefixes centi- and milli- for 100th or 1000th, written and preferably spoken as simply cm and mm without a period at the end. For long distance the 1000 meters or kilometer is the unit, skipping the dekameter and hektometer.

In France they do what we do with our decimal currency; they use meters and centimeters and omit decimeters or decameters, as we omit dimes and eagles. They do not need all these units in their measures any more than we do in measuring money.

I once gave 50 metersticks to a factory employing 50 men and said to the foreman, "Distribute these metersticks and do all your work metrically." He looked a little astonished and said he was afraid they would make confusion. I told him that all his orders would be given in the metric system, and explained to the men that the meter was like our dollar and the smaller units like our cents and mills, no regard being paid to the decimeters or decameters any more than to dimes and eagles. He put the system in the factory and later said he did not have trouble in a single case. Thus a lot of uneducated laborers were instructed in five minutes so that they used the system easily and successfully. It is being used increasingly, but must necessarily gain ground slowly till this government follows the example of others and makes it the only legal system.

You noticed recently that congress passed a bill making the metric system compulsory throughout this country after January 1, 1901. The next day it was reconsidered. I asked a prominent congressman why they reconsidered the action. He told me that they practically all felt that it was a wise and important step and that when he has passed his time of greatest usefulness in the schoolroom his wants will continue to be provided for.

How often do we hear of some of the most wide-awake and successful teachers leaving the profession to take up other lines of livelihood. These are usually young people who feel that their best days must be spent in doing that which will provide best for old age. Without a pension and retirement fund they must eke out of their salaries enough for the time when their services as teachers are no longer required. The teacher being obliged to appear before his pupils always well dressed, to subscribe for educational publications and to take part in the philanthropic work in the community finds little left for old age.

The public would receive better work by the employment of a teacher full of vigor, vitality and improved methods in teaching than it would by the continued employment of the teacher who, while he is not entirely incapacitated for schoolroom work, has passed his meridian of excellence. Do we not know of many in our experience who are dragging out a miserable existence in the schoolroom? They must keep going or they with perhaps some loved ones must depend on charity, and to the refined and sensitive nature of the teacher death would be more welcome than aid of this sort. There are many in the employ of educational boards giving unsatisfactory work because of age or physical disability, who ought to be justly retired and thereby give place to the vigorous and more modern man. He should be the one in actual service while the teacher who has given his best and most useful days to the profession is recognized as one who should be and is worthy of a dignified retirement. How can a teacher whose health is enfeebled keep abreast of the present requirements in education? It is impossible. Consequently the child is not receiving the best and the public is to that extent a loser.

If the teacher anticipated an honorable and dignified retirement after long and faithful service, the management of the schools and the teaching in them would be enough better to prove the pension and retirement fund an economical course. The best interests of the children in the schools must not be sacrificed. The argument in sionary in the cause to secure the hearty cooperation of all the others and so make the teachers practically a unit in this movement. It would then be a comparatively easy matter to secure such legislation as might be necessary to make our organization successful.

I believe that if this movement were once thoroughly organized it would receive assistance from most unexpected sources, for we know that there is no class of public servants that stands so close to the people of this state as the teachers of their children, and if we are thoroughly united in what we desire we can secure it. When the teachers of the state thoroughly understand what the success of this proposed movement will mean to them, I have no fear of not securing their cooperation, but we must use the utmost care to see that they do understand us.

It might be of interest to notice what has been done already in the line of pensions for teachers in foreign countries. In all of the European countries except Spain and Great Britain provision is made for the worn-out or superannuated teachers, and in Great Britain the teachers themselves have recently established a union which in the form of a mutual aid society pays annuities to disabled teachers.

All the states that form the German empire pay pensions to both teachers and their widows and orphans, their funds having existed over a hundred years. The teachers pay a small annual premium and the remainder of the fund is contributed by the state. If total disability occurs after 10 years of service an annuity equal to one fourth of the salary is given the beneficiary, while the maximum annuity paid under the German system is equal to three fourths of the salary. All teachers are compelled to contribute to the pension fund their first month's salary after appointment but the dues thereafter are very small, while the state never pays less than one half of all the expenditures and annuities.

In Austria a pension fund for teachers is made up first of 2% of all salaries, $\frac{1}{10}$ of the first year's salary and the first tenth of all increases; the remainder of the fund is supplied by the state and communities. The amount of annuities varies from a fixed amount paid once for all to one of a full salary after 40 years of service. In

Inspector E. W. Lyttle—I think that Prin. Searing was a little mistaken in one point that he made. It was that some of the teachers of England were only providing a pension for themselves. That has become a national movement, and I have here a statement of that movement and the propositions that are made in England in regard to annuities for teachers. It is difficult to get a consensus of opinion on this matter. At the Council of superintendents the resolutions of the committee were presented as directed. The Council of superintendents deferred action on them, agreeing to take them up at a later date, but apparently they felt that this was not a thing that they cared to meddle with and made no response to our invitation. Nor have I received any reply from the Association of school commissioners of the state. May I ask how many have come to this meeting as delegates from different cities; will they kindly rise? [Five rose]. There, it seems to me, is the difficulty and the great difficulty of doing anything in the matter of a pension scheme or annuity association for the teachers of this state. While every city and every town employing a superintendent has had an invitation to send representatives here, there are only five that have responded.

Then of course we are going to have trouble in agreeing on the different points. Some cities have their own associations now. New York city has an association which we supposed was very prosperous, but I have a paper here which shows that there is grave and serious discontent in the city of New York among the teachers in regard to the rules governing their association, and they are petitioning the board to make a change.

A COPY OF A MEMORIAL PRESENTED TO THE BOARD OF EDUCATION 5 DECEMBER, 1894

To the honorable the board of education

Gentlemen: The undersigned respectfully request that the following amendment be added to the retirement act:

All annuities paid to principals and teachers, male or female, shall be uniform, the lowest salary for any permanent teacher after the expiration of the junior year to be the standard as to the amount. In no case shall any assessment be levied upon the salary of any principal or assistant teacher for the purpose of making up any deficit which might occur in the retirement fund.

In support of the above we offer the following reasons:

1 Participation in providing the fund for this act is compulsory not elective.

2 No annuitant should have needs which require greater consideration than those of the active workers who are compelled to provide the fund.

3 Basing distinctions in annuity upon salaries seems unfair because:

a) There is no by-law nor arrangement which provides for equal chance of advancement to the higher salaries in a given time.

b) The salary paid to a teacher of the first rank in the female department is but little more than half the amount paid to a first rank teacher in the male department, though the curriculum for the girls course is the same as that for the boys, and the standard for admission to the normal college is 74%, while to enter the N. Y. city college requires but 60%. Basing pensions upon salaries will perpetuate these and similar inequalities.

c) In the girls course from introductory class to graduating class, requiring in a number of instances 40 or more teachers, there is only one salary of $1000, which is attainable only by chance and is out of the reach of those who have the responsible fundamental work.

d) The average salary for instruction in the rudiments of a foreign language is $1172, while that for instruction in the rudiments of the national language including salaries of vice-principals is $640.

e) The annuities for principals will range from $875 to $1000, while it takes 14 years active service for a female assistant to receive $750 salary and she may never get any more. The highest salary in the female department which may be duplicated under any circumstances is $873, and the highest in the primary department which may be duplicated is at least $123 less.

4 Pensions are most needed by those who have had least opportunity for providing for years of infirmity. Eliminate the feature of need and there is no cause for pensions.

If any person whose salary is above $1000 be retired according to the act as it now exists, it will compel a reduction of salaries to maintain annuities higher than the nominal value of the salaries, for reduction for all absence regardless of the cause is to be prescribed in order to render the retirement fund "fully adequate to meet the demands . . . for the payment of annuities as herein provided." (*Journal board of educ.* 7 Mar. 1894, p. 290-91)

Believing that the views of the case we have presented were not realized by the members of the board of education when the committee on by-laws, in compliance with the direction of the board of education (*Journal board of educ.* p. 398) framed the retirement act (*Journal board of educ.* 20 Dec. 1893, p. 1317, 14 Feb. 1894, p. 107), we would earnestly and respectfully ask that they now receive con-the employment as a certified teacher in an elementary school. The superannuation allowance for each year of service is 10 shillings. Thus if a school teacher has been continuously employed from his 21st to his 65th birthday he will be entitled to a pension of $110 a year. If a school teacher drops out of the profession before the age of 65, he is not to be entitled to any return of contributions, nor will he have any claim to a pension. To become entitled to a disablement allowance, a teacher must have served not less than 10 years of recorded service, and must have become permanently incapable of being an efficient teacher. Such a situation entitles a man to an annual allowance of $100 for 10 completed years of service, with the addition of $5 for each additional year of service. A woman is to be entitled to $75 with the addition of about three dollars in respect to each additional year. In no case is the disablement allowance to exceed the annual sum which a teacher might obtain in the way of pension by continuing to serve till 65.

These are the main features of the plan. There are numerous details in the way of safeguards. A few years of working will show its strong and weak points. The mutual assistance features of the plan are similar generally to those of many excellent fraternal organizations. The wisdom of the feature of government aid is open to question. It would be better if teachers were paid large enough salaries to enable them to care for themselves in old age.

The state educates teachers by the hundreds and thousands every year who go into the teaching profession and they keep the salary of the teacher down where it does not belong because they stay there three years and then leave the profession. These men and women educated at state expense, teaching two and three years and leaving the profession, are keeping down the salaries of men and women who are devoting their lives to a profession that they feel they can not give up. It would be only fair that the state, if we could unite sentiment in this matter, should compel those who are educated henceforth at the expense of the state to contribute 5% of their salaries, or a reasonable per cent of their salaries, for a fund that shall care for disabled teachers, and then if the state should guarantee a pension at the end of their service to the teachers who voluntarily join the association and pay their dues, and of course to those who remain as teachers and who pay a certain per cent of their salaries as is done in European countries, possibly something might be done. The English plan has some sound sense behind it, as it seems to me. Is it worth while to go on any farther with this?

Sup't H. P. Emerson—I presume that one reason for lack of interest in this state movement is the fact that so many localities have already organized some such movement. This matter in Buffalo was begun and carried through and put in operation since I became superintendent, so I know something about it. My object in bringing it about was twofold, first I had the good of the teachers in view, and second the good of the schools. I suppose Buffalo is not very unlike other large cities in having a great many old teachers. Once in a while I have a letter of inquiry asking me about the security of the teachers' tenure in Buffalo. I always answer that the only difficulty is that it is too secure for the good of the schools. The schools in Buffalo have been damaged 10 times as much by keeping in inefficient teachers as they have by dropping out good teachers. Now, what shall be done with these old teachers that have passed the stage of their usefulness and who are a positive detriment to their classes? Public sentiment, specially if the teacher has been a good teacher, will not uphold the superintendent in turning her adrift without support. She will get the support of the public as against the superintendent in any such movement as that. That was one thing that urged me to make some provision for these old teachers that have taught 30 or 40 years and ought to be replaced with younger and more vigorous teachers. It was the schools, not the teachers, I was looking after. I wanted to have these teachers that were simply going through the motion without any life get out and let younger teachers take their places. So I looked around over the country to find out what had been done. Finally I appointed a committee of members to draft the substance of a law, which they did. It was passed by the legislature the same winter. The main features of it are like all other retirement fund provisions. When a woman teacher has been in service for 25 years, or a male teacher 30 years, he or she may be retired by the superintendent. When a woman teacher has taught 35 years, or a male teacher 40 years, that teacher may retire at any time that he or she elects, but no teacher can draw an annuity from the fund till he or she has paid in 20%. That is where some of the laws are weak. The teacher that has never paid anything is put on the same the president of the women teachers association and the president of the male principals association, so that the teachers seem to be well represented in the management of it.

Prin. Edward Hayward—I believe that we ought to go on with this matter. In Lockport we have an association of teachers where the notice was read the other night. I am safe in saying that the great majority of our teachers are very much in favor of it, the women specially. Suppose that Buffalo or New York do not want to join us, let them go on in their own way and let this association be started. I believe you will find throughout the state thousands of teachers in the smaller cities who would be willing to join such an association. It would have to be something like an insurance company. Teachers would have to be examined as to their health and would have to pay a small percentage of their salary. I believe the plan is entirely feasible, and I think it ought to be encouraged. Many of the country teachers would come in. We could not pay a large pension; we do not want it. I believe that we should go on.

Prin. A. L. Goodrich—I am at present and have been for a number of years a member of just such an association as this formed outside of large cities. I do not know whether Mr Lyttle has investigated the condition of the Boston association or not, but the city of Boston has a very large association managed very successfully. There are certain weak points in it which were discovered after its organization. The Boston association declined to receive into its membership any persons outside the city though the suburban towns petitioned for admission. The suburban towns therefore formed an association of their own. This association was formed in eastern Massachusetts cities and towns along the eastern seaboard and somewhat into the interior of the state. I do not know that any limit was set as to the number of towns to be admitted. The number was limited in the beginning simply by circumstances, and towns are admitted even now under certain conditions. The association was formed into a legal body, as in Buffalo, and is working its way into a fairly successful condition. The idea of compulsory membership in it has never been advocated. We were warned distinctly by the insurance commissioner of Massachusetts that our finances would be in danger if we did not take great care to get into legal shape, for the reason that assessments obtained in the common way depend on numbers for their amount in the same way that mutual benefit insurance associations do, and that in so far as we depend on this we were likely to meet with disaster. As a precaution against such a result the association set itself at work to accumulate a large reserve fund. The Boston association I know at one stroke accumulated a fund of $50,000 which they still hold, and have since increased. They did it by a large fair held in the city of Boston. Some such plan as this can undoubtedly be carried forward to a financial success, but it must be watched carefully. One of the rules of our association is that under no conditions shall a pension be paid of more than $600. The chief point that I care to emphasize here is the feasibility of such an association, without depending on compulsion, in which a group of towns can combine as well as a single city. The association to which I belong is composed of a group of towns, has a legalized existence as a society and is capable of holding and investing funds. Its funds are invested in mortgages, I think, almost entirely.

Sec. Melvil Dewey—It seems to me that when the state is paying so many million dollars a year for its teachers, and when there is agreement that there ought to be larger salaries, etc. it would not be unreasonable to ask the state to pay this 1¢ if it wishes to recognize long service of 25 or 40 years. There seems to be a kind of assumption that we can not put our teachers on a different plane from the organized butchers. Isn't it according to our standard, and according to sound public policy, that the teachers of the state should receive that amount of recognition? That is a simple and cheaper way to do it. The keeping of separate funds by the comptroller requires extra bookkeeping and is an expensive nuisance. Two or three years ago we secured the consolidation into a single fund of the six or eight different educational funds.

Sup't H. P. Emerson—Suppose instead of deducting 1¢, you should give the teacher 1¢ more. You would still have old teachers a detriment to the schools whom no superintendent would dare to drop because public opinion would be against it and because they would be in want if they were dropped, and so they would continue being a positive damage to the classes just as they are now.

Sec. Melvil Dewey—I mean to have the annuity, but to pay it through the state.

CHILD STUDY IN THE HIGH SCHOOL

GROUP MEETING 3 CONDUCTED BY PRIN. J. G. ALLEN, ROCHESTER FREE ACADEMY

Prin. J. G. Allen—Child study has been called a fad. Whether it proves a fad or not remains to be seen. Many people have been surprised that there should be child study in the high school. When we consider that the transition state of a human being from childhood to manhood and womanhood is perhaps the most important, we do not wonder that the subject of adolescence is considered important. I was impressed with the importance of this subject on first hearing Dr G. Stanley Hall, president of Clark university, lecture on the subject of "Adolescence." I went home determined to do something in this line. I knew that I had about 900 boys and girls in the high school and that I knew only their names, enough to say "How do you do, Jennie," "Charlie" or "Johnnie," but I decided that more was necessary for the principal and the teachers of a high school, in order to get into close touch with their pupils. Realizing this a series of questions was adopted at our school. We asked the parents certain questions concerning their children, to get a deeper, broader and better knowledge of our boys and girls. We formulated a series of questions for the grammar school principals, who furnish our school with material, and we had hearty responses from parents, principals and former teachers. I will give you one instance of the results of this effort.

A teacher once became slightly impatient with what she thought the continued failures of a boy. She sent him to the office and called down the tin tube saying, "This boy should be sent away from the school." I questioned him and from three or four questions I saw the spirit of the boy. I found in the list of answers that had been made out the replies of the father and the teacher, and both agreed. The teacher said, "This boy is slow but have patience with him." I turned to what the mother had said of the boy, and called the teacher who was so anxious to have the boy leave school. We talked the matter over and read the replies of the principal and of the parents with reference to this boy. The teacher said "I don't know that I care to say anything more now of this matter, Mr Allen; if you will consent I would like to give this boy another trial." The boy had another trial, and from knowing his nature, in talking the matter over, his teachers were softened, and at the end of the year he came out successful.

CHILD STUDY IN THE HIGH SCHOOL

BY PRIN. B. B. FARNSWORTH, LANCASTER HIGH SCHOOL

As a sculptor stands with chisel and mallet in hand before the block of marble which he has selected with great care, he has in his mind an image, perfect in beauty and symmetry, of the statue he wishes to carve. More than that, he sees within that block of marble, the statue complete and seemingly separate from the outer parts of the block but still inclosed by them. So distinct must the outline of that statue be to his mind's eye, that, as he carves away the outward parts, the sculptor never allows his chisel to come within that outline lest he carve away a part of the image and mar forever the beauty of the figure. He toils on with the greatest care, patience, and perseverance till from out that rough block he has produced a statue, beautiful in outline, perfect in symmetry, a statue which shall stand before us, "a thing of beauty" and "a joy forever;" and we sound his praises throughout the land, perhaps throughout the world.

Our work as teachers has been likened to the sculptor's, for we are to take these specimens of humanity that come to us in the rough and shape them after our ideal. Our position, however, differs somewhat from his, for he selects his own material, ours is selected for us. He begins and completes the work according to his ideal, but we are to build our ideal on a foundation laid by some one else. He works on inanimate material, but we are to work with that which is animate and immortal, a mind stamped with the very image of God. And, when after years of anxious working, waiting, and, sometimes, weeping, we see that boy who came to us with that sullen, cruel, criminal-like disposition, in outward appearance far less pleasing than the sculptor's rough block of marble, changed, molded by that faithful teacher till in place of the frown there is a smile and instead of that criminal-like disposition there is a disposition that seems to partake of the very nature of the Great Teacher himself, what is the opinion of the community in regard to his work? What will they who were so full of praises for the first workman have to say in favor of the second? Practically nothing, for they have not yet understood the work of the teacher.

If there is one phase of the subject of child study that will be more fruitful in immediate results than any other, it is, I believe, that phase which will result in the cooperation of parents and teachers. And if the work of child study in the high school can be carried on so as to bring about this cooperation, our efforts will be amply repaid. I shall speak later of our work in Lancaster.

Child study is usually spoken of as though it were a new subject, and in the methods employed I dare say it is new, but the subject is as old as the scheme of modern education. Every successful teacher has done some work in this connection and we believe that the best teachers of the past were those who best understood the mental makeup of their pupils; and the work in practical and systematic child study seems to have begun in trying to find out the plans and methods employed by these best teachers in the study of their children.

The plans and methods of some of the prominent educators seemed to promise great results, and so all over the country teachers fell to work along some line of child study. Many of these expected to discover information that would soon clear the educational path of all obstacles and henceforth we should have clear sailing. A great many failed to get the results they expected, their enthusiasm died out, and now I suspect they are simply teaching school and waiting patiently for the time when Prof. Royce's *Consulting psychologist* shall take up his abode in their respective towns and set all these matters aright.

There are those who are working more particularly on the scientific side of this question and by and by they are going to have

The slow pupil has to pay the closest possible attention in order to follow the work that is being given while the bright one sees at a glance the point that is being brought out, and then his mind is off and away dwelling on other objects of interest. Every time this process is repeated the one is becoming stronger mentally, the other weaker. So they continue through school, one forming the habit of paying close attention, the other forming the habit of giving about half his attention. And then in after life we are surprised that, in the actual affairs of business and professional pursuits, that slow boy of yore is standing in the front rank while often his brighter companion is back in the crowd. The masters in any calling are those who can exert a wonderful power of attention.

The public school motto is, "The greatest good to the greatest number;" but the significance of that motto will not stand out in all its fulness till it means the greatest good to the individual pupil. Child study in the high school is compelling us to consider the individual, but how with our present teaching force we are to meet and satisfy the demands of each pupil in the high school is a question yet to be answered. Whether we shall give the brighter pupils an extra subject to be done in the same time, or the same number and go more deeply into the subject, or the same number to be done in less time are some of the ways that might suggest themselves to our minds.

In Lancaster, we are experimenting some in this direction this year both in the grammar and high school departments but our work has not progressed far enough to allow us to draw conclusions at this time. We hope however, to improve.

In connection with our own personal observation of the pupils, we have for sometime, been using a printed form which we send to the parents and ask them to fill in their replies and return the form to us. These questions bear on the general health, the school work, and other interests of the pupil.

In regard to the health of the pupil we inquire about the sight and hearing, number of hours of sleep, exercise and recreation, headache, etc.; and then ask the parent to mention any injurious effects that seem to be traceable to the school.

the same city. She brought a certificate that she had done the first half-year's work satisfactorily. She was therefore admitted to the second half-year's work. At the end of three years she is still doing that second half-year's work, making the sixth time she has gone over it. There was no record with the certificate telling how many times she had gone over it before she came to me.

A second young woman came to me from another high school. She had been over certain work twice in another school, she went over the work with me five times, and then I transferred her back, and at last reports she was still doing the same work. It is possible that each of these young women has gained from that term's work all that she could, but traditions are against the promotion of those girls to the work of the next grade. There is one tradition particularly that might well be put behind us and child study may enable us to do that. I see no justice in insisting that A whom God has made a 100% boy be promoted on 75% of his work, when we demand that B a 50% boy shall be promoted on 90% of his work. It is impossible for one boy to get anything out of the course of study, while the other fellow does not get half out of it that he ought. I contend that A must be promoted on a 90% basis and that B should be promoted on a 45% basis.

Prin. Farnsworth—I would be pleased to mail the circulars to any one wishing them who will leave his name with me.

Sup't George Griffith—Having taught with Prin. Larkins and supposing that I knew him well, I am amazed that he should allow any student who was reasonably faithful to go over the same body of work six times in the same course of study. That is an outrage on the child in any course of study, and any attempt to force such a custom on me would be resented. This study of the individual child will teach us not to injure a child, not to compel any child to undergo this kind of treatment.

The only question we have to ask in regard to our course of study is this, Where will it be best for that boy or girl to be placed in his work, in this or that class, this or that grade? When that question is fairly answered the place is given to that boy or girl, whether he has passed 35%, 75% or 90%, and no rules should interfere with them.

As a guide to the teachers of the grades and to the principals, I suggest this general rule that a pupil who has been regular in attendance and faithful in work shall not be asked to go over the same work more than twice under any circumstances. He will get more from the next grade than to go over that work again. I speak from five or six years' experience in our city schools. The enforcement of that rule during that time, with an occasional exception to be individually considered and decided leads me to say that it works well. Not infrequently the pupil will do better in the next grade than in the one where we have been holding him; though he may not pass 40% in the work of that grade, it opens new fields, urges him to new achievements and gives him new motive power in his work. And this result rests on knowledge of the individual pupil, permitting us to judge what is best for him. That knowledge can come only from a study of the individual pupil.

Prin. Allen—Will Sup't Griffith permit a question? How would you study a boy or girl that has been over a subject once and prefers to leave school rather than go over it the second time? What ought to be done in justice to the child and to the school?

Sup't Griffith—The teacher who has been over the work with that child is perhaps the only one that can answer that question. He should know whether it will be best for that child to work in that field another term. He should decide the question finally if his superiors are satisfied that he is deciding in the interests of the child.

Prin. Allen—Knowing the nature of the child from this study you wouldn't insist on going over it even twice?

Sup't Griffith—We promote from the grammar school and into the high school on the recommendation of the principal, indorsed by the teacher.

A delegate—How do you promote in the high school? Would you treat high school pupils as you would grammar school pupils, or promote on two repetitions of a subject?

Sup't Griffith—I can give only our general practice. The promoting idea has been growing. It started with the first three grades and succeeded so well that the next three and then the next three

Prin. Larkins—We undertook to group a class, to put three kinds of students into groups of six each. At the end of the term there were six subclasses in the six different classes, six different subjects and we had in reality six different grades. Sup't Schafer's little scheme of cutting the school into grades and promoting students at the end of every two weeks might be worked into a scheme of the kind discussed.

Sup't Barney Whitney—Many of the so-called stupid pupils when thoroughly roused and given a strong motive come to be the brightest and strongest students in the school and turn out the best men and women. The idea presented today is that child study is going to help teachers of the high schools in the most difficult question of the schoolroom—the method of promoting pupils. Did not the teacher in the first half of the high school year in the case cited claim that the work was satisfactorily done by the girl? Did that principal or teacher study the girl's nature? Yet in the school to which she was promoted she proved a failure and was compelled to go over the work six times. Teachers' judgments vary, their standards are so different that till we find some means to improve them I can hardly see that child study will remedy the difficulty. Do we not insist on the matter of standards? We have had instances in two or three of our schools this year when re-grading, in which it became necessary to promote pupils one year in advance of the grade. The estimated value of their work given weekly by the teacher in all subjects, the reviews and examinations so far, show that the pupils advanced one year out of the grade have done as satisfactory work, and will be as well able to be promoted in the four weeks' time as those who have done the work regularly.

Sup't Griffith—A student in the high school may be allowed to pass on to other subjects without our binding ourselves to issue any diploma of graduation which will make him eligible to a teacher's position, or to any other position. We can allow them to pass on to higher work without giving them any credentials that will entitle them to teach. I take issue with Mr Larkins when he says that the good of the individual must often be sacrificed to the good of the pectation that completer acquaintance would react favorably on school life.

We must express our indebtedness to Prin. Atkinson of the Springfield high school, who originated the idea of using question blanks as a means of communication between one school and another, between the home and the school and between pupils and teachers. Too much credit can not be given Dr Atkinson for the good that has grown and may hereafter grow out of this method of learning to know pupils. A comparison of the blanks given below with the blanks devised by him and printed in the *School review* [v. 5] will show that we have not hesitated to take advantage of what he has made public. We also express obligation to Dr William H. Burnham of Clark university for suggestive questions.

Early in last June the following letter was sent to the grammar school principals:

Hillhouse high school, New Haven, Ct.
school, New Haven

Dear

The time is drawing near when pupils from your school will enter the high school. Few if any of them will be known personally to us, yet on our ability to adjust our efforts to their needs will depend to some extent their physical, mental and moral welfare.

I know you will agree with us when we say that if a school wishes to accomplish much for a pupil the teachers must be constantly asking such questions as these: What are this pupil's greatest needs? Are these needs ministered to by the school? What are this pupil's greatest possibilities? Is the school enabling him to realize them? Yet how can we give intelligent replies to these and similar questions unless we know the pupil well?

Feeling as we do that positive injury may attend the school life of misunderstood children, and that many do not reach the possibilities of which they are capable because more is not known of their individual characteristics, we are anxious to get from you and your teachers such information about the boys and girls who come to us from you as will enable us to deal wisely with them when they are transferred to our care.

If you will fill out the accompanying blanks, one for each pupil, returning them before the close of the term, I assure you that you will enable us to surround the entering class at Hillhouse high school with a much more helpful environment than would otherwise be possible. The work involved is considerable yet we are confident that the teachers will welcome this as a means of practical cooperation between your school and ours in behalf of the young people in whom we shall all have hereafter a common interest.

Very sincerely yours
Myron T. Scudder, *principal*

The blank form to which the letter refers asks information on upwards of 30 different points. To reduce to a minimum the labor of the grammar school teachers these blanks are so worded and arranged that in 18 instances a mere stroke of the pen indicates the information desired, while in most other cases the writing of but one word suffices. The blanks were printed on a rotary neostyle on letter-size paper. The form is as follows:

Report on school, June '98

What school besides yours has this pupil attended?

IN ANSWERING QUESTIONS PLEASE CANCEL SUCH WORDS OR EXPRESSIONS AS DO NOT APPLY TO THIS PUPIL

1 Home conditions: favorable, unfavorable.
home discipline: firm, lax. Pupil is not held down to study.

Do this pupil's parents visit the school or in any other way show particular interest in the educational welfare of the child?

Comments:

2 Physical condition: general health
grows rapidly, is nervous, delicate, has headaches,
is defective in sight, hearing

Has attendance been irregular because of condition of health?

Comments:

3 Characteristic traits: bright, dull; quick, slow; ambitious, indifferent; self-confident, timid; methodical, careless; diligent, indolent; persevering, easily discouraged; self-controlled, hasty, headstrong; refined, coarse; polite, rude, impudent; straightforward, sly

Comments:

4 What can you say of this pupil in respect to the following particulars?
1 General information
2 Outside reading
3 Ability to memorize 4 Ability to think
5 Power of concentration
6 Ability in oral expression
7 Written work

5 In what kind of school work does this pupil show greatest interest?
. In what things if any does the pupil excel?
Note things disliked or that are distasteful

Comments:
6 General behavior In what respects may this pupil cause trouble or annoyance?

In case of difficulty in governing or fault in behavior, what method of discipline will be found helpful?

7 Outside interests and occupations. Which if any of the following takes the pupil's time to a considerable extent? house work, music lessons, paper route, other work, viz

In what other things does pupil show particular interest?
Any specially marked talent or ability?
To what extent if any has pupil's school work suffered on these accounts?

8 Remarks

The grammar school and parochial school teachers filled out blanks of this kind for about 300 pupils, their information being wise and discriminating, and their comments judicious and to the point. What an insight into child mind and child nature these elementary school teachers have! Our experiment certainly has resulted in some benefit. With questions like those on the blank telling teachers what to look for, and laying stress on things important to observe, a keener interest in pupils is induced, the contact between pupils and teachers becomes more harmonious, teachers observe more shrewdly and see more in a child, child nature becomes more intelligible to them. Teachers are able to diagnose and prescribe better, with a tendency to become more just, more tactful, more merciful or more severe as the case may demand, for severity is sometimes wiser than mercy. It tends to give school life greater interest for the teacher, for if she can enter into harmonious relations with child life it will go far toward making her life worth living. Aside from those whose ambitions are rewarded by attaining the higher administrative positions, teachers in general have little to look forward to unless they have that deep interest in children and that knowledge of child nature that is the salt of a teacher's life, or, to drop our figure of speech, is an end in itself most worthy of attaining. It gives an objectivity to our work more satisfying than the mere consciousness of having taught geography or algebra well.

We can give but brief summaries of the reports received from the grammar schools.

1 **A boy.** *Home conditions,* favorable; health, not good; *traits,* bright and quick but indifferent and careless, uneven in his work; polite but sly; lacks application. *General information,* wide, reads extensively, poor in oral expression, particularly interested in history. *Conduct,* poor, whispers and acts out his impulses. *Remarks:* A boy that needs watching and following up; the parents will gladly cooperate.

Being forewarned in this way proper measures may be taken at once with such a boy with most gratifying results.

The question naturally arises as to whether the information thus gained, in case it was unfavorable, would prejudice the high school teachers against a boy or girl. Experience does not show that it does, but the opposite seems to be true, for an unfavorable report from the grammar school seems to inspire high school teachers with a determination to save that boy (it is nearly always a boy!).

2 **A girl.** *Home discipline,* lax. *Characteristic traits,* slow, diligent, self-controlled. *General information,* scanty. *Power of concentration,* poor. *Ability in oral expression,* poor. *Remarks:* General standing, C. Not bright but always interested. Often brought excellent books from the public library, relating to work being done in literature, science and history.

3 **A boy.** *Home discipline,* lax, mother an invalid. *Remarks:* This boy should be reached personally at once. He is easily thrown on the wrong track. Liable to become sullen.

(It may be seen readily how such a suggestion would prove of great advantage, both to the boy and to his high school teachers.)

4 **A boy.** *Home discipline,* lax. Both parents much interested in education. He grows rapidly. *Characteristic traits,* bright, quick, eless, self-confident, yet easily discouraged, hasty, polite, straightward. Needs personal and individual pushing, has been babied home. *Power of concentration,* undeveloped. *Penmanship,* poor; *tance,* fair. *Conduct,* ready to take advantage. *Remarks:* A mising boy. Needs to be toughened.

A boy. *Home discipline,* firm. *Physical condition,* grows rap- is nervous. *Outside occupations,* helps care for invalid grandmother. *Effect of this on school work,* the above has taxed him too much. He should be excused as much as possible from the confinement of school.

6 **A boy.** *Characteristic traits,* bright in some studies, ambitious, self-confident, diligent. Parents are careful to provide books. Fond of reading historical works. *Outside occupations,* early paper route, causing the boy to be drowsy in school at times. *Remarks:* A good boy. May be misunderstood by teachers at first but will be liked better on acquaintance. Full of wit and harmless boyish tricks, but always candid and upright.

7 **A girl.** *Health,* delicate. *Traits,* dull, slow, timid, but methodical, persevering and diligent. Not much general information, does little outside reading, ability in oral expression poor. Work always neatly done. *Remarks:* A delicate child whose mother died with consumption. A little old fashioned in the way of expressing herself because she is brought up among grown-up people, being the only child in the family. Extremely sensitive and good.

8 **A boy.** *Health,* not good. *Traits,* average ability, ambitious to be thought brilliant, self-confident, careless, straightforward. Superficial, little power of concentration, reads considerably, general information good. *Remarks:* This boy does not judge himself fairly. He thinks he does much better than he really does. Does not work well. We recommend him after considerable discussion. He is perfectly able to do high school work if he can be made to apply himself persistently.

9 **A boy.** *Traits,* slow, careless, ambitious yet easily discouraged. *Ability in oral expression,* not good. *Written work,* poor. Excels in original work. *Remarks:* This boy, all his teachers felt last year, is full of promise. In regular school work he was fair and in English (i. e. grammar, spelling, penmanship and the mechanics of written work) incorrigibly and insufferably poor. He is inclined to assume a dogged air and stop thinking, if he thinks he can not understand a matter. But he has a fine, appreciative mind, full of originality and piquancy. For instance in debate he developed great readiness and resource. In composition he was of the best as to matter, as to form, the poorest.

10 **A boy.** Grows rapidly, nervous, looks delicate. *Traits,* slow, indifferent, indolent, easily discouraged, headstrong, sly, can be rude and impudent as well as polite. *General information,* narrow; *ability in expression,* poor. *Behavior,* bad, constantly finding some new annoyance. *Remarks:* Wishes to leave school.

No one needs to be told that with such information at hand a teacher will be able to deal more intelligently with his pupils, and get this sheet of questions as I feel that you now will understand your pupil better.

In the same spirit of appreciation another parent says:

The personal interest of the teacher is greatly to be desired. The mechanical recitations of the automaton are valueless. If an interest can be developed in the studies something will be learned. All school children (their elders likewise) lead two lives, the school life is one, the home life the other, both under different influences; the teacher knows one, the parent the other. I thank you for your evident interest and hope you will receive appreciative answers from all parents.

A third parent adds:

Till recently C . . . has suffered from very delicate health and an extremely nervous and introspective temperament. This together with exceptionally defective eyesight has retarded his progress in school. We think he is interested in most studies as long as his courage is kept up. Requires much encouragement and shows marked responsiveness to sympathy and kindly tact of teacher. Can not over emphasize this fact. Can a live interest in literature be stimulated? Can the students be helped more to speak and write grammatically and fluently?

Many of these reports are of a semi-confidential nature. They tell of defective physiques, of home environment, of difficulties attending the pupil's education, etc. Occasionally, because of the death of the mother, the father bespeaks the special interest of the teachers in behalf of his child.

A few parents comment on the teaching force: "I think Mr . . . might be more agreeable with his pupils." Another says "I am partial to male teachers and for high schools specially, so I think New Haven schools and high school in particular would be far more satisfactory to the parents with a larger percentage of male teachers in the higher grades."

Some parents remark on the art of teaching and methods of conducting recitations: "She ought not to be allowed to eat cake or candy at recess. Ought to be required to do thorough grammar work in connection with Caesar translations so as to place every word in its proper mode, tense, case, number, etc. Ought to be required in reciting to express herself accurately and not bunglingly. Unnecessarily loud voiced and harsh as a result of school influences. Low, sweet tones of voice do not seem to characterize school children."

Speaking of his son's work in recitation this parent says: "Asked too suddenly or sharply he often can not answer though appearing to be indifferent or not trying. Has good general capabilities but needs continual urging and encouraging to keep up the application necessary to produce good results."

Later by letter this father writes: " A teacher ought to have better sense than to give a lesson in any single branch that requires four or five hours of hard work. The careless giving of lessons by different teachers occasionally produces combinations of work that 12 hours would hardly finish as it should be done. Ask your pupils if this is not true. I am sure I could get better results with my boy, who stammers and gets a little confused when suddenly called on and laughs and appears indifferent to any censure or reproof though deeply feeling it all the same, in a private school or with a single tutor. It ought not to be so. The high school ought to be the best place for the average boy." This is sharp, but it is right to the point and is worth reading even outside the limits of New Haven. Such letters serve as a most healthful corrective and tonic.

Another parent writes "Encouragement and belief in D . . .'s ability to do well are great factors in his progress. We feel greatly indebted to his last teachers for their untiring interest and help. His great need is more outdoor life. We wish that he could have opportunities for tennis or baseball. He seems hardly strong enough to enter the regular football team though he is very fond of it. The fall season is rather hard on boys who are not football players as other games seem to be out of date. Perhaps you will suggest more out-of-door life in other ways. We wish he might be encouraged to develop a talent for debating in a clear, logical manner. We are proud of the New Haven high school."

Some parents have much to say about overwork. We quote fully from one of the best, giving many of the questions and answers verbatim.

A mother answers for her daughter:

Condition of health during the past year or two. Excellent.

Any tendency to headache? In the past, no!

Is sufficient recreation and exercise taken each day? Would be if lessons were not made so hard.

absence, and it is important to remember that the loss of even a portion of a school session is likely to be a serious interruption to progress, and to cause one to be a drag on the class.

Again, a pupil can not maintain satisfactory standings without considerable study at home. It is therefore imperative that periods of home study should be free from interruption and as regular and unbroken as though they occurred at school under the eye of the teacher.

If a student attends regularly, gives a due proportion of time to study out of school, and does not allow his outside interests to encroach too far, we may feel sure that interest in school work will look out for itself.

Comments or suggestions by parents

One of the teachers remarked when the first draft of this report was submitted for criticism and suggestions, "that is the most human report I ever saw." It certainly is human. It aims at telling parents something intelligible about their children's work. It gives them something definite and opens their eyes to facts in a way that A, B, C, D's or percentages can never do.

We have spoken of the reports received from the grammar and parochial schools and from the homes, and have shown the kind of report that goes from the high school back to the homes, and also in the case of first year pupils back to the schools from which these pupils have recently come.

But no pupil study scheme can be complete unless the pupils themselves are heard from. To make this possible a question blank was drawn up late in the fall and placed before the pupils for answers. Each pupil could answer or not as he pleased, and was told to feel free to omit any questions. Some did not care to fill out the blanks at first but eventually all came into line and the result is a most interesting and useful mass of opinion concerning school and daily life from a pupil's point of view. The blanks contain 35 questions as follows:

HILLHOUSE HIGH SCHOOL

Name Date

To the pupil: Please answer all these questions frankly and honestly and as fully as time will permit.

A Personal aims and purposes

1 Why do you come to school? (Do not answer merely, "To get an education.")

2 After leaving school what business or occupation if any do you expect to follow? What circumstances influence your choice?

3 If the way were open to you, what would be the goal of your highest ambitions in life?

4 So far as you know have you a weakness or defect in hearing or sight? Have you consulted a physician in regard to this?

9 What kind of manual or constructive work do you like best?
What tools if any do you handle well?
Mention things you have made or done with tools.

10 State what kind of a collection (stamps, eggs, etc.) you are making, and tell how extensive it is.

Comments and suggestions

Somehow I look at a pupil through different eyes after reading his answers to these questions. For instance question 3 says: " If the way were open to you, what would be the goal of your highest ambition in life? " and on one paper I read this: " The highest ambition of my life is to have a sign in front of my house on which would appear Fred. M. Jones, M. D." Fred has been a different boy to me ever since I read that. This little self-revelation of his has given me an insight into his life that makes him more interesting to me. When I see the boy now I am likely to hear the creaking of that sign, to get a glimpse of the " doctor " through the office window or to see him hurrying along the street with his little black case on his errand of healing and I am more likely than before to study his interests. By doing this I may help keep alive that worthy ambition and may do something toward making his schooling of the greatest possible benefit to him, to the end that he may be above the average when he gets into his chosen profession.

A teacher would be richly repaid for his time and trouble in working over these returns. I shall select the most interesting.

" What things if any interfere with your making a good recitation? " Answers may be grouped under four heads.

Nervousness and bashfulness.

" I get nervous." " Am afraid to speak in class." " I get rattled." " I am very nervous and when I get up to recite they all look at me and that very often makes me mix my sentences and altogether make a poor recitation." " Sometimes I feel prepared but when I stand up to recite I get confused." " I have my lessons all learned but when I stand up to recite I get nervous and can not do well." " Being bewildered."

Giggling, whispering and hand raising of pupils.

" I do not say all I desire for fear some might laugh." " Scholars raise their hands if I stop a minute to think." " Pupils try to whisper answers to me when I know them." " When there is a class in the room that is noisy." " Pupils try to help me."

Habits and peculiarities of teachers.

" The teacher stares at you so." " Fear of being criticized by the teacher." " A certain teacher makes me so nervous when I get up to recite that I seem to forget everything." " Interruptions by the teacher." " Teacher is impatient and thereby confuses me." " The way the teachers go at anyone." " Confusion caused by crossness on the part of the teacher." " Because they fly at you when you make a mistake." " In the only recitation in which I do hesitate and am interfered with, the cause is fear of some sarcastic remark." " Feeling that if I hesitate a certain teacher that I have will mark me off for it." " Teachers mix me up." " I can not understand what the teacher is trying to get at."

Miscellaneous.

" Constantly afraid that I will fail." " I use a foreign language at home, so get my English grammar twisted." " Forget what I was going to say." " Inability to bluff." " Hard to express myself." " Not enough time to think."

" Many drop out of school entirely on leaving grammar school. What reasons do you hear boys and girls give for not going to high school? "

Necessity of going to work.

" They have to go to work." " Parents can not afford to support them any longer." (Such answers are quite frequent.)

Tired of school.

" They wish to be free from school duties so as to enjoy themselves." " Monotony of school is wearying." " Tired of school." " Sick of school." " Rather work than study."

Afraid to work; high school work too hard.

" High school is too hard." " The school is too strict." " Have heard that the lessons are too hard." " Afraid they will be dropped." " Some have older brothers or sisters who have been to the high school and they have told how hard and strict it was and it has discouraged the younger ones."

High school education not practical enough; is of no special value unless one is going to college.

" High school is not practical enough for common people." " No benefit if one is not going to college." " They think grammar school education is sufficient." (Many replies of similar nature.)

Most of the answers quoted represent the opinions not of single individuals but of many. Answers identical in substance occur again and again and therefore may be considered as representing the actual state of affairs. We have here a mine of information on the most vital point of school economy and pedagogy. This is specially true of the following question:

Pupils are electing to leave school before the completion of the grammar school course. They are looking forward with anticipation to that time when the age limit will relieve them simultaneously from the grasp of the truant officer and from the wearisome grind of school life. They go out into the world nauseated with potions of arithmetic, grammar and geography or gorged into stupidity by the fancy flutters and dainty titbits so temptingly served by the " enthusiastic specialist " from every field of human knowledge.

Against both programs pupils rebel. The pupils who elect nothing rather than continue along the lines now laid down for them are increasing in dangerous ratio. This applies with particular force to high schools. The number of high school students is not one third what it should be or what it can be. These are questions which lie at the bottom of syllabus revision. Any change made should be examined with reference to their solution. The real problems before us are, how can we change the present syllabus so as to bridge the gulf between the grammar and high schools, what changes are necessary that there may be a marked increase in high school attendance?

In the preliminary report which your committee made at the convocation last June (*see* Regents bulletin 45, p. 356-63), two points were emphasized, the simplification of the elementary school program and the broadening of the scope of high school work, with the hope of accomplishing two things—to encourage pupils to continue through the grammar school, and to offer sufficiently attractive courses in addition to those now found in our high schools to induce a large number to enter on secondary study who now elect otherwise.

In studying this question, it has appeared to your committee that less must be required of grade pupils, and that some of the fields of human knowledge should be left to the high school and the college. The studies essential for future educational work are not receiving the attention they need, nor can they receive adequate attention so long as every department of knowledge is to be represented in the grades by a " specialist."

look toward offering four-year parallel courses in history, science, mathematics and English. It is recommended that the course in history include the study of general history, Greek, Roman and English history with a year of advanced history and civics; the course in science to include a year of physics, a year of chemistry, a year of biologic and a year of geologic study; the course in mathematics to include elementary and advanced algebra, plane and solid geometry, plane and spheric trigonometry and advanced arithmetic; the course in English to include 1st and 2d year English as prescribed in the present syllabus with such minor changes as may seem necessary, advanced English and the history of English and American literature for the third year, and English reading for the fourth year.

SHOULD THE REGENTS SYLLABUS BE MORE SPECIFIC IN POINT OF DETAIL?

Prin. Edward Hayward—It is easy to oppose any institution or its work, specially when that institution publishes the details or scope of its undertaking. Human nature has not changed much since the days of the pious Job who wished that his adversary had written a book. It is not so easy to suggest a remedy for the evils which we so fluently discuss. We are driven to confess sometimes that these evils are somewhat imaginary, or at least are not of so great magnitude as we had supposed.

This generalization may be applied to the University and its work. It is easy to find fault at a distance, when the questions sent us seem to be not just what we would have them, or when the syllabus does not exactly meet local conditions. But when we are told that the syllabus is to be revised, and that all principals and teachers are urged to send in suggestions for the permanent improvement of the outline of our future work, we are suddenly dumb and our criticisms rapidly diminish in number. The apparently prevailing reticence to suggest improvements in the proposed revision is highly complimentary to the University and its officials. The present syllabus has been in every school in the state and practically in the hands of every teacher for about five years. It has been worked over and worked out under varying conditions. Certain modifications must ing, all matters over which there may be difference of opinion. This same principle may be applied to the revision of answer papers. The old college motto has a value here, " In doubtful things, liberty; in essentials, unity; in all things, charity."

Prin. Frederick A. Cook—I agree with Prin. Hayward in his admiration for the syllabus. I believe it is thoroughly good and practical. What few words I have to say will bear more directly on the Greek and Latin, as that is in the line of my work. I think I see a little tendency toward being too specific, and in order to be specific myself I will cite one or two cases in these departments. For example, in speaking of the first year's work under the head of the comparison of adjectives and adverbs, a few of the more common ones are selected. It would be better to mention the topic, and not go further into detail.

In one or two cases there is not a careful discrimination between what is essential and what is practically non-essential. The statement is made under the subject of Greek that unless a student shows such a paper as will convince the examiners that he is fairly conversant with the usual rules of accent, they will feel justified in refusing that paper however good it may be. That seems unreasonable. In my judgment the subject of Greek accent is a comparatively unimportant one. Many of you may not agree with me. I am inclined to agree with the college professor mentioned this afternoon who ignored the whole subject. I do not know that I would go quite as far as that, yet the more I teach the topic the more I think it is something which is not important enough to warrant such prominence as the syllabus gives it. With these exceptions, I agree that the regents syllabus in Greek and Latin calls for hearty commendation.

FOREIGN LANGUAGES

Prin. O. D. Robinson—So far as the subject of foreign languages is concerned there is probably less difference of opinion than in regard to any other required subject in the whole syllabus. The course in Latin and Greek is one established by long usage, even to the amount that shall be read and the order in which the authors shall be taken up. The colleges would like us to read more than we do but unfortunately their desire is modified more or less by the ability of the pupils in high schools and academies. The subject has been fully and sufficiently illustrated in detail, and I agree heartily with all that has been said.

In the first year there is a great deal of detail required that might be omitted. There is certainly work enough planned in 1st year Latin for any class, and probably more work than most of the classes will do.

The second or Caesar year is the most difficult part of the whole subject and I do not see that any modifications of the syllabus can help us. The year is the Waterloo of victory or of defeat to all Latin students, and all substitutions that have been attempted do not seem to remedy the matter very much. The teachers come to Caesar after a trial of the others or they seem to think it necessary to read Caesar after reading the other authors. Perhaps the requirements could not be changed very much, but there might be more leniency in regard to inspection of papers in 2d year Latin, and possibly in the preparation of question papers. In the Caesar paper difficult questions in philology and extraneous questions of history should be omitted, and in the examination of the papers crudities in translating Caesar might be allowable which would not be permissible in Virgil or Cicero.

Trouble begins with the modern foreign languages. Precedents are useless. There are no established courses of study; colleges have done little to help us. I understand the regents intend to put French and German on an equality with Latin. Why don't they do it? You can never make German or French equal to Latin if you give Latin four years and French or German three years. In a Latin diploma you require 16 counts and in a French or German diploma only 12 counts. There is need of careful revision here, and the authors should be as discriminatingly specified in German and French as in Latin. If you give these foreign languages the same chance as the dead languages, and you ought, you should give them the same amount of time and treat them alike in every respect. If a scholar wants four years of German and three years of Latin why not let him have it and give him a diploma for it? If he wants four years

The early part of the course may be given profitably to the study of the general subject of physical geography, the pupil acquiring a working knowledge of the technic of physiography, including meteorology and geology. Careful study should be devoted to the causes that determine the configuration of land masses, to the action of bodies of water, to the various atmospheric phenomena and to the interrelations of land, water and air. The distribution of plants and animals, and the influence of these organisms on the physical condition of the earth should be briefly treated. The earth should be studied also in its relation to the other members of the solar system, the field of astronomy being indicated to the pupil.

Before the middle of the course, the intensive study of physical geography should begin. Though the dynamic forces of nature may not be thoroughly studied till the pupil has acquired a more definite knowledge of physics, such forces may be considered in detail in their present operation, and hence by analogy in their past influence on the surface of the earth. A liberal time allowance for field work should be made, the action of the forces of nature being carefully observed during field trips with classes. Note taking should be an essential feature of the course, the notes to be transferred in neat form at the close of the trip to a special notebook for the subject in the hands of each pupil. The production of these notebooks may be required in connection with the examination.

The examination will include the following topics:

1 *General description of the globe.* Its size, form and mass; its relation to the sun and moon and to the other members of the solar system; its origin according to the nebular hypothesis; the two principal motions of the earth, and the effect of these motions on the physical condition of the earth. The astronomic and geographic circles of the earth; the division of the surface of the globe into zones; latitude and longitude, and the differences of time. The magnetic properties of the globe, and the variation in the manifestations of these properties in different parts. The internal heat of the globe, methods of studying it, and its effect in producing warm springs, volcanoes and earthquakes and general movements of the earth's crust; nature and distribution of volcanoes and principal

money to use, not how may the student body of the state receive the greatest good. So in regard to the English, the question seems to be "how can we make the student read the greatest number of books," not "how may the student be directed in his reading to acquire a love for good literature."

I sincerely regret the discussion of the morning. I also regret the fact that so many books are in some of the reading courses. I would not presume to criticize the one who is responsible for the courses in reading, as they now exist; but I am free to confess that in my judgment the average student in the high schools of this state would have a better appreciation of and greater love for good literature, if he read fewer books and came to a fuller knowledge of the literature and author. In a good book we find an author at his best. Whatever of culture and refinement he possesses we meet here. Let the pupil come into touch and companionship with the author, and think of him and speak of him as his friend. This will give high ideals to student life and strong character only comes from high ideals.

The objective is to create a love for good literature and I claim that the hand-shaking method is not the ideal method. A desire to mingle in refined society is not created by taking the young man from place to place and merely giving him an introduction to the members of such society; so a love of good literature is not created by a mere introduction to a great number of authors.

I plead for fewer books in the reading courses, carefully selected, and more thoroughly studied.

Prin. C. W. Evans—The position which English occupies in our educational system is paradoxic. The desires of those who wish that it might find its proper level as a study have not yet been realized because no two of them are agreed on any one point. In following your discussions on this subject for several years past, I find that the point which has been most clearly established is that of the absence of a common basis of belief and of practice. The question what we shall do in teaching English—the language to which we were born, the language in which the declaration of independence was written, the language in which have been expressed three fourths of the ideas that have influenced the progress of the world for the last thousand years—is strangely enough the question with which we seem least able to deal.

English is the most powerful language that the world has ever known. It contains in its literature more of living value than all other languages combined. Yet it has been so taught in the schools of America that a thorough dislike for the study of it has become one of our recognized school traditions. A large percentage of public school pupils study English in much the same spirit in which they lie abed with the measles in skating time, or indulge in a toothache on Thanksgiving day. This state of things is due primarily to faulty methods of instruction, and faulty methods of instruction are due in part to the ignorance of the teacher, and of those who map out courses of study, and in part to the stupidity of a large majority of the so-called textbooks on English. The elementary language books have teemed with such expressions as "quality words" and "action words" and "complements," and with long lists of insufferably dull and meaningless sentences, that were supposed to develop a knowledge of the principles of syntax. Those intended for the higher grades have furnished lists of the same kind of sentences, interspersed with delectable rules, and exceptions, and cautions and so-called "false syntax," as if there could be any such thing. And all this dry and sapless mass of rubbish, the life-loving American youth has been required to study and expected to enjoy, regardless of the fact that it was contrary to his rational instincts, and did violence to his intellectual well-being. The girl, with the greater docility of her sex, has submitted to the affliction with something like grace; but the boy under the promptings of his nascent instincts of independence, has yielded to superior force only after protesting that he "couldn't see no use of studyin' grammar." And the boy has been more than half right all these years.

With all the marvelous resources of our language to furnish that which is suitable and interesting to every age, we have consumed the time of childhood in grinding over hopeless paradigms and stupid lists of meaningless sentences. While we might have been gathering both knowledge and inspiration from a critical study of clare in disgust that they have children in the fourth grade who can write better letters than that, and our cycle is thus complete. I have little sympathy with this pharisaical excusing of one's own incompetence by vilifying some one farther back in the course.

Since time has demonstrated that the results of a system of instruction are unsatisfactory, the conclusion is reasonable that there is something wrong with the system. Nor is the remedy far to seek. There are some present who will recall that at one time the pupils in Latin were required to spend the major portion of the first year in committing paradigms and rules. After that came the detached sentence method. Then by way of a vigorous protest, there were some who went just as far the other way, and started the beginning classes on Caesar's *Commentaries*. The folly of this departure was soon recognized, and we now have 1st year Latin books founded on such literature of the language as is adapted to the capacity of beginners. The same course of development is progressing in the matter of English. We are just now in the stage in which the reaction from the mechanical routine has carried us too far the other way. The English requirements in our schools in the recent past have borne about the same relation to the needs and abilities of our pupils that the study of Caesar does to 1st year Latin work; not objectionable in itself, but decidedly unsuited to the capacity of those for whom it is intended. The results are manifest in the friction which has followed, but it is reasonable to hope that fair-minded discussion will bring about such an adjustment as will place the entire subject on its proper basis of dignity and attractiveness. It certainly is not right that our pupils should flock into the Latin and German classes, and have to be "rounded up" when the time comes for English. It is not right that so worthy a subject should continue to be so taught as to produce a feeling of repugnance among our pupils. Our young people should learn to respect our language as they respect our flag, because of its appeal to their patriotic impulses. I suspect if the keeper of a boarding school had for years required his pupils to make one meal a day on corned beef hash, it would not give them the basis of an intelligent judgment concerning the merits of good fresh beefsteak as an article of diet. We might even forgive a boy under such circumstances if he " didn't see no use " of eating beef. So it is with the teaching of English. And I leave the suggestion for what it is worth that since the distaste for hashed English is so pronounced, it might be well to omit that form of it from our requirements.

Prin. T. B. Lovell—The teacher of English should be himself a master of English. Whether he teaches the grammar and analysis of the language, the literature and history of it, or the best methods of expression, he must be qualified to do more than follow the suggestions of an outline or the guidance of a syllabus. We are required to be able to express ourselves clearly and with force in conversation, in discussion and in correspondence.

To teach successfully in the grammar grades the teacher should have a thorough mastery of all that the high school can give in addition to a thorough preparation in the specific work which is undertaken. To teach English successfully in the high school the teacher must have a thorough mastery of all that a good college or normal school can give in the department of English. The teacher of grammar and analysis should know far more than is contained in the usual textbooks on these subjects. A knowledge of the history of the language, its development, something of its literature, and how best to express thought accurately in paragraph and in sentence is but a part of the requirements.

To gain this knowledge the work in English in the high school, in the training classes and the normal schools must be strengthened. This strengthening must come from courses of one or two years in normal schools, teachers colleges, or colleges of arts and sciences, given for a proper preparation in English for the teacher in the high school. No graduate of a normal school or of a college of a score of years ago was competent to teach English properly because he was a graduate of these institutions. Neither was the graduate of this year capable of doing the required good work, unless he had had special training in English during his course of study. There is a demand for trained men in the college. With trained men there, we get trained men and women in the high school, and with these in the high school we get trained teachers in the grades. It works of view. The vast majority of pupils finish their education before they enter the high school, and as educators we shall be false to our trust if we do not teach them to write English correctly before they leave the grammar schools.

Sup't J. L. Walthart—I have great faith in the regents office. I have never had occasion to criticize the action of the directors or the inspectors, and hence I come with some reluctance to give my testimony at this testimony meeting in regard to English. I feel somewhat as the good brother did who was asked to say what the Lord had done for him during the past week, and he arose and said " nothing to brag of." The real good that we are getting from the English at present is, in my opinion, nothing to brag of. Each teacher, although he may have his specialty, should recognize the fact that there are other subjects in the course equally as important. I believe that this fact is not sufficiently recognized in the requirements for English at the present time. We were told in the able address last night that whatever our theories might be, we must face the facts, and the facts are that at the present time the English is not a success and is not satisfactory under the present conditions. The standard may not be too high, I believe it is not higher than it should be, but that standard should be reached, and must be reached, by a gradual growth, and that gradual growth must be nurtured by wisdom and common sense. My faith in the regents office leads me to say that I would be willing to leave this subject there for final settlement. I suppose, Mr Chairman, we must leave it there anyway, and whatever we may say on the subject will perhaps not affect the result. I will simply suggest that it be left there with the recommendation that revision in English, general, complete and immediate, is necessary.

Prin. J. G. Allen—What we have just listened to with reference to bad English corresponds very well with the condition of things I find in my school. It frequently happens that when boys and girls come to the office, sometimes for discipline and sometimes for something else, I am compelled to say, " Jennie, or Charlie, that is not good English. From what grammar school did you come? " This whole matter is deplorable and the regents syllabus is responsible munication (we get that before entering the secondary school and can keep it if we practise enough) but to get at the literature, that great body of English literature which has so much in it that stimulates the imagination, that has a content that is valuable because it will keenly interest us in esthetic and intellectual lines, valuable beyond words to my mind. This I wish to get at and I wish to have my pupils get at it and to have the stimulus of it. If I do not do this, I do not believe I succeed in doing what they as English speaking people have a right to expect. For that reason I hope that the course which has been described will be continued, but I should like to see it completed not quite in the way suggested. I should like to see a thoroughly good three years' work of genuine English literature with which the pupil might go on for a fourth year. Wherein he might for instance correlate English history with some period of literature, English history of the time of Elizabeth with the literature of that age, for example, making the work intensive and letting it follow the three years of work already laid down. If this could be done it would give a sequence in the study of English that to my mind is very desirable.

The conference took a recess at 11 p. m.

Thursday morning

Prin. Fosdick introduced a resolution demanding changes in the question papers in English which was not adopted.

Prin. S. R. Brown—I do not believe that I understand the meaning of this resolution. What is meant by " demanding "? Do we refer to the person who may make up the questions, or the inspector who may have the English work in charge, or to what?

Prin. T. O. Baker—It seems to me that the resolution is too strong. There may be objections, there are objections, but to bring up a resolution and ask our principals to vote for that resolution, as sweeping as that is, I for one do not want to commit myself in that way. If the resolutions are so changed as to specify in what particulars these questions are not just, and are not comprehensible, I

Prof. Wickes always carries everything by storm, he deserves to; but notwithstanding all that has been said, I want to ask the consideration of this one question: Is it not for the interests of our schools not to drop civics, but to have it correlated with American history? As has been said on this floor this morning, the mass of detail is so immense that no school can do justice to anything so vast, and the question I submit is, would it not be wise, while we extend the course in American history to one year, to adopt in it the teachings of civics so far as the constitutions of the state and nation are concerned, the United States constitution and the state constitution being the ground work for our civics teaching along with our American history? There is something that is absolutely definite.

In regard to New York history, I am glad to agree with the excellent paper that was read, that its importance does not merit the two counts. But I must respectfully differ from the gentleman who read the paper in regard to the Roman and Grecian history. I have said on this floor more than once that I believe, what many of you believe, that the roots of American history go back to Rome and Greece, and I believe that instead of diminishing, we ought to increase the power of those histories as educational needs. I would have each of them made a 20 weeks study with two counts. I believe they richly deserve it. In regard to advanced American history, let that stand. It is excellent and it gives opportunity for the mature study of American history, of which every student ought to have the privilege if he desires. In regard to French history, of course the regents will decide whether or not that is to be retained. I would like very much to see the lives of men the special topics, so that in the study of history we can have its twin sister biography. I think a year's course of biography covering the world's great men would be vastly more profitable for our schools than is our general history of today. If we are to have general history it would seem it ought to cover a year, and if we can not have a year for it, I woul rather not have it at all.

Prin. H. T. Skerritt—I would strongly favor devoting 20 wee to Roman and Greek history, both given in one examination, a the identity of the civics. I think that the schools supported by the state and for the state should have a knowledge of the state. I do not believe in losing the identity of the technic and mechanical part of our own civic life and exalting those old fellows who lived 2000 years ago. I do not believe we need Roman and Greek history for a whole year. If you want to give the ancients some time and attention, place your efforts on their languages. I do not believe many classical teachers here think that they have too much time for those subjects today, and if you wish to obtain the most profitable results from the classics put your time on their literature, on their language, not on the mere details of some few things they did or did not do. Personally I am sorry that at present so little regard is paid to the classics by men who owe to the classics a good measure of their material prosperity and success. We are killing these subjects ourselves, it is not the public nor the children that are doing it. How many students in your high school are seeking the classics? Look at the salaries we are paying classical teachers for the little work done in the average country high school. There is going to come a time when you will see a line of demarcation between the city high school and the other high schools of the state. We do not need more Roman or more Grecian history in the country; we do need more American history and more civics.

Prin. J. G. Allen—We can not teach too much history. We can not teach too much civics. But I should think as readily of separating geography from the study of history as I would of separating civics from the study of history. I should think as readily of separating laboratory work from the study of physics as I would of separating civics from the study of United States history. They belong together. I do not see how we can teach American history without teaching civics. I am thoroughly and heartily in sympathy with putting civics and American history into both the grammar and high school courses and letting them come along at the proper time.

I would add to Prin. Farr's suggestion that we have the constitution of the state of New York and the constitution of the United States in the grades and the same in the Rochester high school.

APPENDIX

SUMMARY OF THE PROCEEDINGS OF THE MEETINGS OF THE

Conference on uniform entrance requirements in English

1894-99

At the meeting of the conference held in New York, May 29-30, 1899, it was ordered that a summary of the proceedings of the various meetings of the conference be printed for distribution to the members of the various bodies represented.

To guard against possible misinterpretation of the action of the conference, the secretary was instructed to incorporate into his record of its proceedings a statement of the fact that, by the terms of its organization, its work is limited to recommendations designed to secure uniform college entrance requirements in English. These recommendations are made to the several organizations represented in the conference, but are not to be regarded as expressions of the views of such organizations till formally adopted by them. Colleges and other educational institutions are bound by the action of the conference and of the organizations represented in it only so far as they individually and officially sanction such action.

First meeting, New York, May 17-19, 1894

ABRIDGED REPORT OF THE MEETING

The first steps toward the unification of college entrance requirements in English were taken by the Association of colleges and preparatory schools of the middle states and Maryland, at its first annual convention,[1] held at Columbia university, Dec. 1-2, 1893. On December 2, Prin. Wilson Farrand, of Newark academy, read a paper on English in the preparatory school, in which he deplored,

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[1] In 1887 the College association of Pennsylvania was formed; in 1888 it became the College association of the middle states and Maryland; in 1892-93 it admitted preparatory schools to membership, and again changed its name.

In executive session, the conference adopted the following report, with the understanding that it should be presented for ratification to each of the bodies represented in the conference:

Books for 1901

The conference recommends:

That the books set for reading and practice, for the years 1901 and 1902, be the following:

Shakspere's *Merchant of Venice;* Pope's *Iliad,* books 1, 6, 22, 24; The Sir Roger de Coverley papers in the *Spectator;* Goldsmith's *Vicar of Wakefield;* Coleridge's *Ancient mariner;* Scott's *Ivanhoe;* Cooper's *Last of the Mohicans;* Tennyson's *Princess;* Lowell's *Vision of Sir Launfal;* George Eliot's *Silas Marner.*

That the books set for study and practice, for the years 1901 and 1902, be the following:

Shakspere's *Macbeth;* Milton's *Lycidas, Comus, L'allegro,* and *Il penseroso;* Burke's *Speech on conciliation with America;* Macaulay's *Essays on Milton and Addison.*

The conference also recommends:

That there be inserted at the end of the statement of the requirements for reading and practice the following sentence:

> In preparation for this part of the requirement, it is important that the candidate shall have been instructed in the fundamental principles of rhetoric.

That there be inserted at the end of the statement of the requirements for study and practice the following sentence:

> In addition, the candidate may be required to answer questions involving the essentials of English grammar, and questions on the leading facts in those periods of English literary history to which the prescribed works belong.

The conference is in favor of the preparation and recommendation of an additional list of books for voluntary reading, and appointed a committee of five, consisting of Messrs Scott, Briggs, Farrand, Baskervill and Miss Jordan, to prepare such a list of books, to be presented at the next meeting of the conference.

The conference believes that, so far as is practicable, colleges should require clear and idiomatic English in all examination papers and notebooks written by candidates for admission. Teachers are requested to insist on the use of good English as an essential part of the pupil's training in his translations from foreign languages, and in whatever he writes or speaks on any subject in the school course.

The conference adjourned, to meet in Philadelphia during the week of the next meeting of the Modern language association of America, Dec. 27-31, 1897. At this time the committees appointed to prepare a list of books for voluntary reading and to consider the advisability of issuing a more detailed statement of the requirements, and suggestions for a course of study in preparation for them, will present their reports.

Fourth meeting, Philadelphia, Dec. 29, 1897

There were present as delegates: from the Commission of colleges in New England on admission examinations, Professors C. T. Winchester, Albert S. Cook, and L. B. R. Briggs; from the Association of colleges and preparatory schools of the middle states and Maryland, Professors Francis H. Stoddard and G. R. Carpenter, and Prin. Wilson Farrand; from the New England association of colleges and preparatory schools, Dr Frank A. Hill, Prof. Mary A. Jordan, and H. G. Buehler; from the North central association of teachers of English, Prof. Fred N. Scott and Prin. C. N. French; and from the Association of colleges and preparatory schools of the southern states, Prof. J. B. Henneman.

This being an adjourned meeting of the conference, Prof. Stoddard was retained as chairman, and Prof. Cook as secretary. A report having been presented by the committee appointed to consider the advisability of issuing a more detailed statement of the requirements, it was, after discussion,

Voted, That the conference recommends:

1 That English be studied throughout the primary and secondary school courses, and, when possible, for at least three periods a week during the four years of the high school course.

2 That the prescribed books be regarded as a basis for such wider courses of English study as the schools may arrange for themselves.

Fifth meeting, New York, May 29-30, 1899

There were present as delegates: from the Commission of colleges in New England on admission examinations, Professors C. T. Winchester and Albert S. Cook; from the Association of colleges and preparatory schools of the middle states and Maryland, Professors Francis H. Stoddard and Franklin T. Baker, and Prin. Wilson Farrand; from the New England association of colleges and preparatory schools, Dr Frank A. Hill, Prof. Mary A. Jordan, and H. G. Buehler; from the North central association of teachers of English, Professors Fred N. Scott and W. W. Cressy and Prin. C. N. French; and from the University of the State of New York, Dr Charles Davidson.

The conference organized by appointing Prof. Stoddard as chairman, and Prof. Cook as secretary.

A statement having been made to the effect that a list of books, purporting to be one recommended by the conference for voluntary reading, had been published by Houghton, Mifflin & Co., the secretary was instructed to ascertain whether the fact was as reported, and in such event to make the proper representations to Houghton, Mifflin & Co.

A suggestion as to the choice of prescribed books, which had been sent by the English department of Wellesley college to the Commission of colleges in New England, was received from the latter body, and read.

The conference recommended:

That the books set for reading and practice for the years 1903, 1904 and 1905, be the following:

Shakspere's *Merchant of Venice* and *Julius Caesar;* The Sir Roger de Coverley papers in the *Spectator;* Goldsmith's *Vicar of Wakefield;* Coleridge's *Ancient mariner;* Scott's *Ivanhoe;* Carlyle's *Essay on Burns;* Tennyson's *Princess;* Lowell's *Vision of Sir Launfal;* George Eliot's *Silas Marner.*

That the books set for study and practice, for the years 1903, 1904 and 1905, be the following:

Shakspere's *Macbeth;* Milton's *Lycidas, Comus, L'allegro,* and *Il penseroso;* Burke's *Speech on conciliation with America;* Macaulay's *Essays on Milton and Addison.*

Lowell. Biglow papers; Poems.
Macaulay. Essays; Lays of ancient Rome.
Malory. King Arthur.
Mandeville.
Marco Polo.
Milton. Comus; Il penseroso; L'allegro; Lycidas; Paradise lost.
Montaigne. Selected essays.
Motley. Rise of the Dutch republic.
Newman. Idea of a university.
Palgrave. Golden treasury (First series).
Parkman. Conspiracy of Pontiac; Montcalm and Wolfe.
Percy. Reliques.
Plato. Apology of Socrates; Phaedo; Phaedrus.
Plutarch. Lives.
Poe. Poems; Tales.
Pope. Essay on man; Rape of the lock.
Reade. The cloister and the hearth.
Prescott. Conquest of Mexico; Conquest of Peru.
Ruskin. King of the golden river; Sesame and lilies; Selections.
Scott. Abbot; Ivanhoe; Kenilworth; Lady of the lake; Lay of the last minstrel; Marmion; Old mortality; Quentin Durward; Talisman; Woodstock.
Shakspere. As you like it; Hamlet; Julius Caesar; King Lear; Macbeth; Merchant of Venice; Midsummer night's dream; Tempest; Twelfth night; the plays concerned with English history.
Shelley. Selections.
Sophocles. Antigone; Oedipus King (Jebb's or Plumptre's translation).
Spenser. Faerie queene.
Stevenson. David Balfour; Dr Jekyll and Mr Hyde; Kidnapped; Poems; Treasure island.
Stowe. Uncle Tom's cabin.
Swift. Gulliver's travels.
Tacitus. Agricola; Germania.
Taylor, Bayard. Views afoot.
Tennyson. Poems.
Thackeray. English humorists; Henry Esmond; Pendennis; Four Georges; Newcomes; Vanity fair.
Thoreau. Walden.
Thucydides. (Jowett's translation).
Trevelyan. Life of Macaulay.
Tyndall. Hours of exercise in the Alps.
Webster. First Bunker hill oration; Plymouth oration.
White. Natural history of Selborne.
Whittier. Snow bound; Tent on the beach.
Wordsworth. Selections.

The secretary was instructed to secure the printing of the minutes of this and the two previous meetings, together with an account of the earlier proceedings of the conference, as soon as practicable; and the chairman and secretary were authorized to provide a number of copies not to exceed 2500 and to distribute them to the secretaries of the respective bodies represented in the conference.

The secretary was instructed to express the thanks of the conference to the authorities of New York university and of the University Place church for the provision of rooms for the use of the conference.

The conference thereupon adjourned.

ALBERT S. COOK
Secretary

ATTENDANTS

AT

14th Annual Conference of the Associated Academic Principals

Under names of institutions those not specially designated are teachers and instructors.

University staff

Administrative department. 1 Melvil Dewey (Amherst), M. A., *secretary;* 2 Henry I. Knickerbocker, *head clerk.*

College and High School departments. 3 James Russell Parsons jr. (Trinity), M. A., *director;* 4 Henry L. Taylor (Syracuse), Ph. D., *director's assistant;* 5 Edward S. Frisbee (Amherst), M.A. D.D., *assistant;* 6 Frederic M. Baker, *apparatus clerk.*

Inspection division. 7 Charles F. Wheelock (Cornell), B. S., *head inspector;* 8 Charles N. Cobb (Syracuse), M. A.; 9 Arthur G. Clement (Rochester), M. A.; 10 Charles Davidson (Yale), M. A. Ph. D.; 11 Eugene W. Lyttle (Hamilton), M. A. Ph. D.; 12 S. Dwight Arms (Hamilton), M. A.; 13 I. O. Crissy; 14 James H. Gibson, *inspectors.*

INSTITUTIONS IN THE UNIVERSITY

Colleges for men

Hobart college. 15 Pres. Robert E. Jones (Williams), B. A. S. T. D.

University of Rochester. 16 Prof. Henry F. Burton (Michigan).

Colleges for men and women

Alfred university. 17 Pres. Boothe C. Davis (Alfred and Yale), Ph. D.

Syracuse university. 18 Dean Albert Leonard (Ohio), M. A. Ph. D.; 19 Prof. Richard Jones (Iowa and Heidelberg), Ph. D.

Keuka college. 20 Dean Edward C. Hayes (Bates college and Chicago), M. A.

Schools of pedagogy

University of Buffalo, school of pedagogy. 21 Susan F. Chase.

Academies, high schools and academic departments

Adams Center union school. 22 Prin. V. C. Warriner (Potsdam normal school).

Afton union school. 23 Prin. Charles S. Gibson (Portland normal school).

Akron high school. 24 Prin. Orson Warren (Geneseo normal school).

y high school. 25 Prin. Oscar D. Robinson (Dartmouth), M. A. Ph. D.; 26 Horatio M. Pollock (Union and Leipzig), Ph. D.

Albion high school. 27 Sup't Mrs F. A. Greene (Rochester); 28 Prin. Edward P. Smith (Rochester), B. A.; 29 Mary E. Steele (Brockport normal school).

Alexander high school. 30 Prin. Perry H. Kidder (Buffalo normal school).

Alexandria Bay union school. 31 John G. Peck (Hamilton), M. A.

Alfred academy. 32 Prin. Earl P. Saunders (Alfred), M. A.

Allegany high school. 33 Prin. Burdette Phillips (Fredonia normal school).

Andover union school. 34 Prin. J. L. Grantier (Cornell).

Attica high school. 35 Prin. A. M. Preston (Indiana) M. A.

Ausable Forks union school. 36 Theodore F. Brookins (Colgate), B. S.

Bainbridge high school. 37 Prin. F. W. Crumb (Alfred), M. A.

Baldwinsville academy. 38 Prin. Horace D. Rickard (Oneonta normal school).

Ballston Springs high school. 39 Prin. A. A. Lavery (Middlebury), M. A.

Batavia high school. 40 Sup't John Kennedy.

Bath-on-the-Hudson union school. 41 Prin. William H. Good (Central), M.A. Ph.D.

Bergen high school. 43 Prin. E. A. Ladd (Cornell), Ph.B.

Bergen high school. 43 Prin. E. A. Ladd (Cornell), Ph. B.

Binghamton high school. 44 Sup't R. H. Halsey (Williams).

Black River union school. 45 Prin. William H. Burgess.

Bolivar high school. 46 E. E. McDowell (Geneseo normal school).

Boonville high school. 47 Prin. Walter T. Couper (Hamilton), M. A.

Borough of Queens, New York. 48 Sup't Edward L. Stevens (Hamilton), M. A.

Brasher and Stockholm high school. 49 Prin. H. P. Baum (Potsdam normal school).

Brewster high school. 50 Prin. Herbert G. Reed (Rochester), B. A.

Broadalbin union school. 51 George Fenton, *president board of education.*

Brooklyn manual training high school. 52 Prin. Charles D. Larkins.

Brushton union school. 53 Prin. E. L. Hulett (Potsdam normal school).

Buffalo schools. 54 Sup't Henry P. Emerson (Rochester), M. A.

Burdette high school. 55 Prin. John Probes (Cortland normal school).

Caledonia union school. 56 Prin. E. L. Morrison.

Cambridge high school. 57 Prin. E. E. Smith (Amherst), B. A.

Camden high school. 58 Prin. H. T. Skerritt (Oswego normal school).

Canajoharie high school. 59 Prin. Schuyler F. Herron (Syracuse), M. A.

Canandaigua high school. 60 Sup't J. C. Norris; 61 Prin. F. Z. Lewis.

Canastota union school. 62 Prin. G. H. Ottaway (Hamilton), M. A.

Greene high school. 132 Prin. William N. Harris (Geneseo), B. A.

Griffith institute and union school. 133 Prin. W. S. Steele (Hamilton), M. A. LL. B.

Hamburg high school. 134 Prin. William B. Chriswell (Brockport normal school and Cornell), Ph. B.

Hamilton high school. 135 Prin. Charles H. Van Tuyl (Cortland normal school).

Hammondsport high school. 136 Prin. Myron C. Plough (N. Y. S. normal college).

Hannibal union school. 137 Prin Sherman Wooster (Oswego normal school).

Herkimer high school. 138 Sup't A. J. Merrell (Rochester), B. A. M. A.

Hermon union school. 139 Prin. James Harrigan (St Lawrence), B. S.

Highland Falls union school. 140 Prin. M. H. Dusinbury (Geneseo normal school).

Hilton union school. 141 Prin. William R. True (Brockport normal school).

Hobart high school. 142 Prin. George J. Dann (Union), B. A.

Holland Patent high school. 143 Prin. D. H. Naylor (Hamilton), B. A.

Homer academy and union school. 144 Prin. L. H. Tuthill (Cornell), B. A. M. A.

Honeoye Falls high school. 145 Prin. L. A. Toepp (Griffith institute).

Hoosick Falls high school. 146 Sup't H. H. Snell (Alfred), Ph. B.; 147 Prin. B. Frank Cooley (Brockport normal school and Rochester).

Hornellsville high school. 148 Prin. Elmer S. Redman (Illinois Wesleyan), M. A. Ph. D.

Horseheads union school. 149 Prin. G. Turner Miller.

Hudson River institute, Claverack. 150 Vice-Prin. A. Lincoln Travis (Syracuse), M. A.

Huntington high school. 151 Prin. Sanford L. Cutler (Amherst), M. A.

Ilion high school. 152 Sup't and Prin. Judson I. Wood (Brown).

Irondequoit union school. 153 Prin. John Greene.

Irvington high school. 154 Prin. R. A. McDonald (Potsdam normal school).

Islip high school. 155 Prin. M. I. Hunt (Oswego normal school).

Ithaca high school. 156 Prin. F. D. Boynton (Middlebury Vt. college); 157 Elmer E. Bogart (Cornell), B. A.

Jamestown high school. 158 Prin. A. N. Taylor (Michigan), B. S.

Jamesville union school. 159 Prin. G. T. Fuggle.

Johnstown high school. 160 Prin. Alvin A. Lewis (Alfred), B. A. Pd. B.

Kingstown free academy. 161 Prin. M. J. Michael (Tufts), M. A.

La Fargeville union school. 162 Prin. B. G. Pooler.

Lake George union school. 163 Prin. George C. Perry (Union), B. S.

Lake Placid union school. 164 Prin. W. Almon Andrews (Buffalo normal school).

Lancaster high school. 165 Prin. Burt B. Farnsworth (Buffalo normal college).

Lansingburg academy. 166 Prin. C. T. R. Smith (Williams), M. A.

La Salle academy. 167 Brother Heeborian (Queen's college, Ont.), B. A., *head master.*

Lawrence high school. 168 Prin. Fred De L. King (N. Y. S. normal college).

Leavenworth institute. 169 Prin. J. W. Fowler (Hamilton), M. A.

Le Roy high school. 170 Prin. J. C. Benedict (Geneseo normal school), Ph. B.; 171 F. K. Sutley (Geneseo normal school), Ph. B.

Lestershire union school. 172 Prin. E. T. Graves.

Lewiston union school. 173 Prin. W. J. Greene (Geneseo normal school).

Liberty high school. 174 Prin. Louis S. Odell (Oneonta normal school).

Littlefalls high school. 175 Prin. C. H. Warfield (Hamilton), M. A.

Little Valley union school. 176 Prin. George E. Waller.

Liverpool union school. 177 Prin. Manford D. Green (N. Y. S. normal college).

Livonia high school. 178 Prin. William H. Cone (Geneseo normal and Mt Hope college), B. A.

Lockport high school. 179 Sup't Emmet Belknap (Marietta college, Ohio), M. A.; 180 Prin. Edward Hayward (Union), Ph. D.

Long Island city high school. 181 Prin. P. E. Demarest (New York university), Pd. D.

Lyndonville union school. 182 Prin. J. H. Filer.

Lyons high school. 183 Prin. W. H. Kinney (Rochester), M. A.

McLean union school. 184 Prin. James A. Shea (Cortland normal school).

Macedon union school. 185 Prin. G. H. Cullings (Geneseo normal school).

Madrid union school. 186 Prin. Frank H. Wallace (Potsdam normal school).

Mamaroneck union school. 187 Prin. S. J. Preston (Middlebury college), M. A.

Marathon union school. 188 Prin. W. A. Coon.

Massena union school. 189 Prin. Edwin C. Hogmire (Mount Hope), M. A.

Masten Park high school, Buffalo. 190 Prin. F. S. Fosdick (Rochester), M. A.

Matteawan union school. 191 Prin. G. R. Miller (Syracuse), Ph. B.

Medina high school. 192 Prin. T. H. Armstrong (Brockport normal school).

Mexico academy. 193 Prin. A. W. Skinner (Syracuse), B. A.

Middleburg high school. 194 Prin. Edwin F. Norton (Yale), M. A. Ph. D.

Middle Granville union school. 195 Prin. Leon J. Cook (N. Y. S. normal college), Pd. B.

Middleport high school. 196 Prin. Frederick R. Stevens (Brockport normal school).

Mineville high school. 197 Prin. S. D. McClellan (Plattsburg normal school).

Mohawk high school. 198 Prin. S. A. Watson (Hobart), M. A.

Moravia high school. 199 Prin. John D. Bigelow (Hamilton).

Morris high school. 200 Prin. Frank Stanbro (N. Y. S. normal college).

Morristown union school. 201 Prin. W. L. Avery.

Mount Morris high school. 202 Prin. L. N. Steele (Hamilton), B. A.

Mount Upton union school. 203 Prin. J. H. Crain (Oneonta normal).

Mount Vernon high school. 204 Sup't Charles E. Nichols; 205 Prin. A. B. Davis (Hamilton), Ph.B. M.A.

Mumford union school. 206 Prin. Fayette W. Van Zile.

Munnsville union school. 207 Prin. F. M. Wiggins (N. Y. S. normal college).

Munro collegiate institute, Elbridge. 208 Prin. L. G. Turney (Geneseo normal school).

Naples high school. 209 Prin. William C. Noll (Illinois Wesleyan), Ph. B.

Newark high school. 210 Prin. Charles A. Hamilton (Rochester), M. A.

Newark Valley high school. 211 Prin. J. S. Kingsley (Chicago), Ph. B. M.A.; 212 Vice-Prin. Arthur E. Belden (Cortland normal school).

New Berlin union school. 213 Prin. Arthur R. Mason (Cortland normal school).

New Hartford union school. 214 Prin. A. M. Scripture (Hamilton), M. A.

Newport union school. 215 Prin. D. N. Boynton (Potsdam normal school).

New Rochelle high school. 216 Sup't I. E. Young.

Niagara Falls high school. 217 Thomas B. Lovell (Rochester), M. A.; 218 R. A. Taylor (Potsdam normal).

Nichols union school. 219 Prin. Edson L. Moore (Geneseo normal school).

North Olean union school. 220 Prin. Fred W. Mundt (Allegany).

Northport union school. 221 Prin. Benjamin J. Wightman (Union).

North Tarrytown union school. 222 Prin. N. H. Dumond.

North Tonawanda high school. 223 Sup't Clinton S. Marsh (Cornell).

Northville union free school. 224 Prin. F. Johnson (Geneseo normal school).

Oakfield union school. 225 Prin. A. H. Downey (Buffalo normal college).

Ogdensburg schools. 226 Sup't Barney Whitney, M. A.

Olean high school. 227 Prin. Olin Wilson Wood (Syracuse), Ph. B.

Oneida high school. 228 Prin. Frank W. Jennings (Hamilton), Ph. D.

Ontario union school. 229 Prin. M. H. Bigelow (Geneseo normal school).

Orchard Park high school. 230 Prin. A. K. Hoag (Oberlin).

Oriskany Falls union school. 231 Prin. Robert B. Searle (Hamilton), B. A.

Oriskany union school. 232 Prin. William M. Wood (N. Y. S. normal college).

Oswego high school. 233 Prin. Charles W. Richards (Oswego normal school).

Ovid union school. 234 Prin. Lewis H. Clark jr (Cornell).

Owego free academy. 235 Prin. E. J. Peck (Williams), B.A. M.A. LL. D.

Painted Post union school. 236 Prin. Bion E. Hicks (Brockport normal school).

Palatine Bridge union school. 237 Prin. Charles E. Keck (Hamilton), B. A.

Palmyra high school. 238 Prin. W. J. Deans (St Lawrence).

Panama union school. 239 Prin. John M. Crofoot (Cornell), B. A.

Parish high school. 240 Prin. Edwin Cornell (N. Y. S. normal college), Pd. B.

Parker high school. 241 Prin. Edgar W. Ames (Williams and N. Y. S. normal college), Pd. B.

Patchogue high school. 242 Prin. W. E. Gordon (N. Y. S. normal college), Pd. D.

Patterson union school. 243 Prin. Fred C. White (Alfred), B. A.

Penn Yan academy. 244 Sup't Jay Crissey (Chicago); 245 Prin. Howard Conant (Union), B. A.

Perry high school. 246 Prin. William H. Adams (Syracuse).

Phelps union and classical school. 247 Prin. Willis Arnold Ingalls (Cornell), B. S.

Phoenix high school. 248 Prin. Edwin J. Howe (Geneseo normal school).

Plattsburg high school. 249 Sup't James G. Riggs (Amherst), M. A.

Pocantico Hills union school. 250 Prin. Mary Schuyler Hamilton (N. Y. S. normal college).

Port Byron high school. 251 Prin. William L. Harris (Syracuse), B. A.

Port Henry high school. 252 Prin. P. F. Burke (Middlebury college), M. A.

Port Jefferson union school. 253 Prin. E. D. Myers (Oneonta normal school).

Port Jervis high school. 254 [a] Prin. Edwin H. Bugbee (St Lawrence), M. A.

Poughkeepsie high school. 255 Prin. James Winne.

Pulaski academy and union school. 256 Prin. Charles Melville Bean (Cornell), B. S.

Red Hook union school. 257 Prin. D. C. Lehman.

Remsen union school. 258 Prin. Andrew J. MacElroy (Cornell), B.S.

Rensselaer Falls union school. 259 Prin. Abram H. Wiggins (N. Y. S. normal college).

Richfield Springs high school. 260 Prin. J. Anthony Bassett (Rochester), M. A.

Richville union school. 261 Prin. J. R. Gillett (St Lawrence), B. A.

Riverhead union school. 262 Prin. George A. Brown.

Rochester free academy. 263 Prin. John G. Allen (Oswego normal school); 264 Prof. A. L. Arey.

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[a] Deceased

Troy grammar school. 398 Prin. F. A. Cook; **Grammar school no. 3.** 399 Prin. E. A. Frye.

Wayne county. 400 Rufus N. Backus (Colgate), Ph. B., *school commissioner.*

Not officially connected with educational institutions

401 Adams, J. S., Ginn & Co.
402 Bacon, H. D.
403 Bardeen, C. W. (Yale), B. A.
404 Cummings, E. L., Milton Bradley Co.
405 Eddison, Charles.
406 Ellsworth, Jesse A. (Middlebury), M. A., Macmillan Co.
407 Field, George C.
408 Gillett, Charles (Syracuse), B. A., *class teacher,* Eddytown.
409 Hall, M. B.
410 Hogdon, F. C. (Tufts), B. A., Ginn & Co.
411 Ives, William H. (Syracuse), M. A., Macmillan Co.
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420 Smith, V. J. (Wesleyan), B. A., Allyn & Bacon.
421 Southworth, E. F. (Harvard), B. A., Ginn & Co.
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423 Winchell, E. A., Maynard, Merrill & Co. New York.
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University of the State of New York

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1895 CHARLES R. SKINNER, M.A. LL.D. Superintendent of Public Instruction, ex officio
1897 CHESTER S. LORD, M.A. LL.D. – Brooklyn
1897 TIMOTHY L. WOODRUFF, M.A. Lieutenant-Governor, ex officio
1899 THEODORE ROOSEVELT, B.A. LL.D. Governor, ex officio
1899 JOHN T. MCDONOUGH, LL.B. LL.D. Secretary of State, ex officio

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SECRETARY

MELVIL DEWEY, M. A.

DIRECTORS OF DEPARTMENTS

1888 MELVIL DEWEY, M.A. *Administrative, State library and Home Education*
1890 JAMES RUSSELL PARSONS JR, M.A. *College and High School dep'ts*
1890 FREDERICK J. H. MERRILL, Ph.D. *State museum*

PREFACE

Heretofore all question papers used at examinations conducted by the University, including those set for academic, professional and technical tests, have been published in the same volume. The papers for 1899 are divided into high school and college tests, and are put out in separate bulletins.[a] This bulletin contains the preliminary tests prescribed for admission to the high school, and academic tests in all subjects in which examinations have been held to meet the varying needs of the secondary schools of the state, including the tests prescribed by law for admission to professional study.

More than 450,000 answer papers were written in 1899 by secondary school students and about 25,000 by candidates for admission to professional study. Papers of academic students are first rated at the schools and only those deemed worthy of 75% are forwarded to the University for final review. Of these 30,000 are rejected annually by University examiners. Tests for professional students are conducted by University examiners and are rated only by members of the University staff. About 60% of all academic answer papers, including those written by professional students, are accepted annually.

In 1890 President Eliot wrote a careful criticism of regents examinations in which he said that so long as they were conducted at the secondary schools by the principals or deputies without supervision by the regents, they could not command the confidence which independent examinations, conducted by the agents of the regents, would command. For some years now the regents have tried simultaneously both methods of conducting examinations and the average per cent of accepted papers has proved to be almost exactly the same, whether the tests are conducted at the schools

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[a] Recent editions of the papers for 1898 are published separately.

High School Department

156TH EXAMINATION

ELEMENTARY ENGLISH

Wednesday, September 28, 1898—9.15 a. m. to 12.15 p. m., only

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Answer questions 14-15 and eight of the others but **no more.** *If more than eight of the others are answered only the first eight answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Analyze by diagram or otherwise the following sentence: The bark of a dog when he encounters a snake is different from that which he gives out on any other occasion.

2 Parse from the following sentence *companion*, *child*, *fawn*, *was beginning*, *which:* The sole *companion* of the doe was her only *child*, a charming little *fawn*, whose brown coat *was* just *beginning* to be mottled with the beautiful spots *which* make this young creature as lovely as the gazelle.

3 Assume that you have been spending two weeks with a friend at a distance from your home. Write a letter to some member of the family who is at home.

4 Write the third person, singular number of the following forms of the verb *do:* (*a*) active, indicative, past (imperfect), (*b*) passive, indicative, past (imperfect), (*c*) emphatic, indicative, past (imperfect), (*d*) progressive, indicative, past (imperfect, (*e*) active, potential, past (imperfect).

5 Give *five* rules for forming the plural of nouns. Illustrate each rule by an example.

6 Correct the following sentences and give the reason for *each* correction:

(*a*) Was it her that was talking in the next room? (*b*) I see them most every day, (*c*) He hadn't ought to have told her about it, (*d*) You can keep this letter and show it to whoever you like, (*e*) I wouldn't have acted like you did for twice the money.

7 Make of the following a complex sentence with *one* subordinate clause:

The barber slipped on his clothes. He stole forth silently. He followed the water-carrier at a distance. He saw him dig a hole. This hole was in the sandy bank of the canal.

perhaps half a mile farther, it ***occurred*** to her ***that*** it would be safe *now* to turn to the west.

10 Give (*a*) the active and passive participles of ***hear***, (*b*) the active and passive infinitives of *hear*.

11 State how to form (*a*) the emphatic form of a verb, (*b*) the progressive form of a verb, (*c*) the passive voice of a verb. Give (*a*) the emphatic, present, third singular of ***take***, (*b*) the progressive, present, active, indicative, third singular of ***take***.

12 In the following sentences state which of the two italicized words is correct, and give the reason in each case:

a Neither John nor James (***have***, ***has***) written this letter.
b Every pupil in the school must bring (*his*, *their*) books.
c That man passes our house (*most*, *almost*) every day.
d The recipe calls for two (*cups full*, *cupfuls*) of sugar.
e I did not ask to see (*that*, *those*) kind of cattle.

13 Form a word from *each* of the following stems: ***cent***, ***vid***, *capt*, *mitt*, *dign*. Write sentences in which the words formed are correctly used.

14–15 Write an essay of at least 100 words on ***one*** of the following topics, paying special attention to spelling, capitalization, punctuation, grammatic construction, proper use of words and sentence structure [Essays on subjects other than those assigned will not be accepted]:

(*a*) Evangeline's story [When they finally meet, let Evangeline tell Gabriel of her wanderings], (*b*) The childhood of Evangeline and Gabriel [Let a grandmother who was exiled tell to a little boy the story of the childhood of Evangeline and Gabriel, as she remembers it], (*c*) An empty bird's nest [You have found an empty nest. Explain the sudden disappearance of the birds, *either* by telling what you think happened *or* by giving an incident from 'Tragedies of the nests'], (*d*) A deer-hunt [Describe a deer-hunt in the Adirondacks. Write as though you had taken part in it].

NOTE—Pupils not familiar with *Evangeline*, ***Birds and bees*** or ***A-hunting of the deer*** may write on *one* of the following: (*a*) A street parade, (*b*) My favorite animals.

High School Department

159TH EXAMINATION

ELEMENTARY ENGLISH

Wednesday, June 14, 1899—9.15 a. m. to 12.15 p. m., only

Answer questions 14–15 and eight of the others but **no more.** *If more than eight of the others are answered only the first eight answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Analyze by diagram or otherwise the following sentence: On looking up I saw a cat-bird perched on the rim of the nest, hastily devouring the eggs.

2 Compare, giving every form, the adjectives *late*, *old*. Write the positive of the adverbs *most*, *best*.

3 Write the principal parts of *each* of the following verbs: *fall*, *cry*, *throw*, *forget*, *lie* (*recline*).

4 You have been invited by a friend to spend your summer vacation at his home. Write a note thanking him but declining the invitation. Give reasons for declining.

5 Correct the following sentences and give the reason for each correction: (*a*) Let you and I go on the excursion, (*b*) Either of the two sentences are correct, (*c*) We did not think that it could be him, (*d*) Neither he or his brother went out yesterday, (*e*) They that try to help themselves I will help.

6 Make *one* complex sentence of the following: There were tender-hearted people in the valley. They would have spared the deer's life. They would have shut her up in a stable. They would have petted her.

7 State what is meant by *each* of the following: ***abstract noun***, ***proper adjective***, ***subordinate conjunction***, ***adjective phrase***, ***adverbial clause***.

8 In the sentence, *Charles* spent the money ***that*** his father *gave him*, (*a*) parse *Charles*, *gave*, (*b*) give the part of speech and syntax of *that*, *him*.

9 Write (*a*) a simple declarative sentence containing an infinitive phrase, (*b*) a compound imperative sentence containing an adverb of manner, (*c*) a complex interrogative sentence containing an adjective clause.

The squire sat in a large pew. He sat with his family. The pew was gorgeously lined. He humbled himself devoutly on velvet cushions. He read lessons of meekness and lowliness of spirit. He read out of splendid gold and morocco prayer-books.

7 Either explain how one word in *each* of the following pairs differs in meaning from the other *or* give by derivation the meaning of the italicized words: *suggestion*, hint; *permanent*, durable; *description*, exposition; *auditor*, spectator; *rectitude*, integrity.

8 Give the syntax of the italicized words in the following sentences:

(*a*) It is *worth* a dollar, (*b*) Let him *take* living, land and life, (*c*) Wilt thou stand all *day?* (*d*, *e*) 'Twere long *to tell* what cause I have *to know* his face.

9 Explain how it happened that the French and English languages existed side by side in England; state when this was the case and why it ceased to be the case.

10 Write sentences illustrating the following: *that* introducing (*a*) a clause of purpose, (*b*) a clause of result or consequence, (*c*) a noun clause; *as* introducing (*a*) a clause of time, (*b*) a clause of degree.

11 Give examples, showing that noun clauses may be introduced by interrogative adjectives, by interrogative pronouns, by interrogative adverbs, by compound relative pronouns, and by *lest*.

12 Give the syntax of the italicized words in the following:

(*a*) John seemed to be a *student*, (*b*) I thought John a *student*, (*c*) I gave the *student* a dollar, (*d*) I asked John, the *student*, to call, (*e*) I asked the *student* to call.

13–15 Write an essay of not less than 150 words on *one* of the following topics, paying special attention to spelling, punctuation, grammatic construction and proper use of words; also some attention to introduction, proper grouping of ideas into paragraphs and pleasant transition between sentences [Essays on subjects other than those assigned will not be accepted]:

(*a*) The causes of the late war between the United States and Spain, (*b*) An important event of the past year.

plainer if you wish to be understood, (*e*) He has come a long ways to try the examination.

8 Change the subordinate clauses in the following sentences to infinitive or participial phrases: (*a*) As they observed the various figures, they came to a halt, (*b*) It is not worth while that one should lay much stress on this objection, (*c*) But the colonial authorities, since they trusted in the remoteness of their situation, shortly renewed their severities, (*d*) That he might avoid the old farmer, Dominicus rose in the gray of the morning and trotted away.

9 You have failed to keep an appointment because of an accident. Write a note explaining your absence and offering the choice of two dates for a future meeting.

10 Form a word from *each* of the following stems: ***dat***, ***sanct***, *volv*, *val*, *sec*. Write sentences in which the words formed are properly used.

11 Write *two* sentences illustrating *two* different uses of ***that*** as a subordinate conjunction, giving the syntax of each subordinate clause (not of the words within the clause).

12 (*a*) There shall it flame, keeping ***bright*** the memory of heroes, (*b*) But they drew closer together, dreading ***lest*** the universal cloud should snatch them from each other's sight, (*c*, *d*) Still, perhaps, they would have been ***resolute to climb*** as far and as high as they could find foothold.

Give the syntax of ***bright***, the part of speech and use of ***lest***, the syntax of *resolute*, *to climb*.

13–15 Write an essay of not less than 150 words on ***one*** of the following topics, paying special attention to spelling, punctuation, grammatic construction and proper use of words; also some attention to introduction, proper grouping of ideas into paragraphs and pleasant transition between sentences [Essays on subjects other than those assigned will not be accepted]:

(*a*) The story of the packet of letters [The letters that Saint Hilda's abbess gave the palmer], (*b*) How Wilton was again dubbed knight, (*c*) The bale-fire's warning [Tell, as one in the tower, how the news of invasion came to Branksome tower], (*d*) How the wizard's book was found.

NOTE—Students not familiar with *Marmion* or *Lay of the last minstrel* may write on the following: The books I like best [State why you prefer them].

High School Department

157TH EXAMINATION

ELEMENTARY ENGLISH

Wednesday, January 25, 1899—9.15 a. m. to 12.15 p. m., only

Answer questions 14-15 and eight of the others but **no more.** *If more than eight of the others are answered only the first eight answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Analyze by diagram or otherwise the following sentence: On lifting up the leaf I discovered that a hairy spider was ambushed there and had the bee by the throat.

2 Compare *long*, *most*, *best*, *worst*, *valuable*, giving the name of the degree with each form.

3 Write sentences containing the following: (*a*) the possessive plural of *woman*, *girl*, (*b*) the relative pronoun *whom*, (*c*) the interrogative pronoun *whom*, (*d*) two demonstrative pronouns in the plural number, (*e*) the two plurals of *brother* and *cloth*, stating the meaning of each plural form.

4 Write a letter (not a note) to your father who has been away from home for two weeks. Give items of home, school and town news.

5 Give of the verb *try* (*a*) the present perfect (perfect) active infinitive, (*b*) the emphatic, active, indicative, present, third, singular, (*c*) the passive, indicative, future, third, singular, (*d*) the active, indicative, future perfect, first, plural, (*e*) the past participle.

6 Correct the following sentences and give the principal parts of each italicized verb: (*a*) Go and *lay* down, (*b*) Some valuable land was *overflown*, (*c*) A little later the clouds *begun* to gather, (*d*) The water I *drunk* there made me ill, (*e*) I was very tired because I had *swam* a long distance.

7 Make one compound sentence of the following: Several crows are walking about. They are walking about a wheat-field. The wheat-field is newly sown. We are passing through this wheat-field. We pause to note the graceful movements of the crows. We pause to notice their glossy coats.

8 Correct the following sentences and give the reason for *each* correction: (*a*) *Birds and bees* were written by Burroughs, (*b*) Has everybody solved their examples? (*c*) We were comparing Caesar and Napoleon's victories, (*d*) He don't believe that the Oregon is our best battle-ship, (*e*) Your 4s look like 7s.

9 Form *one* word from *each* of the following stems and use each word correctly in a sentence: *migr*, *graph*, *viv*, *plic*, *loc.*

7 Analyze by diagram or otherwise the following sentence:

There was a handsome youth in rustic garb, and by his side a blooming little person, in whom a delicate shade of maiden reserve was just melting into the rich glow of a young wife's affection.

8 Write sentences containing *three* of the following: (*a*) a noun clause used as subject, (*b*) an infinitive phrase used as subject, (*c*) an adverbial clause expressing condition, (*d*) a predicate adjective, (*e*) *as* used as a relative pronoun.

9 Classify 10 different words in the following sentence as Latin, Greek or Saxon: By these various methods I shall gain an accurate analysis, and finally bestow the result of my labors upon the world in a folio volume.

10 In the following sentences change the italicized words to clauses: (*a*) *Thinking* that his story would not be believed, he remained silent, (*b*) He has a book *to read* to-day, (*c*) Near him sat a man *wearing* a high-crowned hat, (*d*) He was sent by his brother *to inquire* about the man, (*e*) If the law is passed he is certain *to hear* of it.

11 Give the syntax of the italicized words in the following: She and her sister fell *asleep* with hands tenderly *clasped*, and awoke from visions of unearthly radiance *to meet* the more blessed light of *one another's* eyes.

12 Define *each* of the following words by giving the meaning of the prefix and of the stem used: *anarchy*, *bisect*, *protrude*, *transform*, *interrupt*.

13–15 Write an essay of at least 150 words on *one* of the following topics, paying special attention to spelling, punctuation, grammatic construction and proper use of words; also some attention to introduction, proper grouping of ideas into paragraphs and pleasant transition between sentences [Essays on subjects other than those assigned will not be accepted]:

(*a*) Marmion's journey to the Scottish court [Let Wilton describe to Clare an important event that occurred on the journey], (*b*) The adventures of the heir of Buccleuch [Suppose the heir of Buccleuch to tell his mother what happened to him from the time he was enticed into the woods by the elfin page up to his return to Branksome Hall], (*c*) The truce between the hostile armies [Describe what happened between the making of the truce and the death of Musgrave].

NOTE—Students not familiar with *Marmion* or *Lay of the last minstrel* may write on *one* of the following: (*a*) An experience on a street car or on a railway train, (*b*) What I saw in a dream.

8 Beneath the shelter of one hut sat this varied group of adventurers, *all so intent* on a single object, *that, of whatever else* they *began to speak*, their closing words were *sure to be illuminated* with the great carbuncle.

Give, from the above quotation, the syntax of *so*, *that*, *to speak*, *sure*, *to be illuminated*.

9 Parse, from the quotation in question 8, *all*, *intent*. Give the syntax of the phrase *of whatever else*. Give the active infinitives and participles of *began*.

10 Change the following complex sentences to simple sentences without changing the meaning: (*a*) As he came quickly into the room he did not notice the presence of a stranger, (*b*) It is not right that one man should rob another, (*c*) A man that is patient and persevering will succeed in the end, (*d*) When a man has such an idea, he is either eccentric or ignorant, (*e*) He will not go before he finishes this task.

11 Form words containing the following prefixes: *bene*, *con*, *contra*, *dis*, *pro*. Give the meaning of the prefix and of the stem used.

12 Describe the condition of the English language during the Anglo-Saxon period. Show how the language was changed, as a result of the Norman conquest.

13–15 Write an essay of at least 150 words on *one* of the following topics, paying special attention to spelling, punctuation, grammatic construction and proper use of words; also some attention to introduction, proper grouping of ideas into paragraphs and pleasant transition between sentences [Essays on subjects other than those assigned will not be accepted]:

(*a*) A memorable voyage [Let one of the nuns describe the voyage to St Cuthbert's Holy Isle], (*b*) Marmion's stay at Norham castle [Let young Selby tell in after years what happened during Marmion's stay at the castle], (*c*) How Branksome's lord won fair Eskdale [Let Woodkerrick, the one survivor of the Beattisons, tell how Branksome won the valley of Eske], (*d*) A war of words [Describe the scene that led the English and Scotch to consent to the single combat between Musgrave and Deloraine].

NOTE—Students not familiar with *Marmion* or *Lay of the last minstrel* may write on *one* of the following: (*a*) My longest journey [This may be a real journey or an imaginary one], (*b*) Why we celebrate the Fourth of July.

4 And as afield the reapers cut a swath
Down through the middle of a rich man's corn,
And on each side are squares of standing corn,
And in the midst a stubble, short and bare—
So on each side were squares of men, with spears
Bristling, and in the midst, the open sand.

Point out in the above quotation the items of similarity common to the figure and to the statement which the figure illustrates.

5 Mention and discuss (*a*) *three* characteristics of style that contribute to clearness, (*b*) *two* that add force.

Second division 6 State what author given in this course is associated with *each* of the following places: Gadshill, Abbotsford, Salem, Isle of Wight, Lake district.

7 Mark the scansion of the quotation in question 4. State the prevailing foot and meter, and point out the principal cesuras.

8 How does Coleridge account for the rising of the dead bodies and for the movement of the ship when 'never a breeze up blew'?

9 Describe the circumstances that prepared the way for the assassination of Caesar.

10 How did Ellen discover that Fitz-James was king? Sketch the scene.

11 Why did Silas Marner become a miser? Explain somewhat in detail, how the simple-hearted, affectionate young man became the solitary, faithless miser.

12 How did the rumor about Mr Higginbotham's death arise? How was it spread and in what way did stern fact kill it?

13 Write on the following topic: Mr Barkis' manner of wooing.

14 Give, in substance, Sohrab's interview with Peran-Wisa in the early morning.

15 Make a brief summary of the facts known to you about Shakspere, omitting all information about his works.

10 Explain the value of action in the education of the scholar, as given by Emerson in the *American scholar*.

11 Give, from the *Deserted village*, a description of the village before its desertion, with some comment on its inhabitants.

12 The popularity of Gray's *Elegy in a country churchyard* is said to be due to (*a*) the subject, (*b*) the diction. Explain this statement, illustrating from the poem.

13 Discuss the justice of the treatment of Shylock in the *Merchant of Venice*, referring specially to (*a*) Antonio's treatment when he borrowed the money, (*b*) Portia's treatment in the trial scene.

14 Write explanatory notes on the italicized expressions in the following from *Il penseroso:*

> Sometimes let gorgeous tragedy
> In *sceptred pall* come sweeping by,
> Presenting *Thebes*, or *Pelops'* line,
> Or the tale of *Troy* divine;
> Or what, though rare, of later age
> Ennobled hath the *buskin'd* stage.

15 State by whom and under what circumstances ***three*** of the following were uttered:

> And this our life, exempt from public haunt,
> Finds tongues in trees, books in the running brooks,
> Sermons in stones, and good in everything.
>
> All the world's a stage,
> And all the men and women merely players.
>
> Time travels in divers paces with divers persons.
>
> There is no vice so simple but assumes
> Some mark of virtue on his outward parts.
>
> I never did repent for doing good,
> Nor shall not now.

High School Department

156TH EXAMINATION

ENGLISH COMPOSITION

Wednesday, September 28, 1898—1.15 to 4.15 p. m., only

Answer questions 10–15 and four of the others but **no more.** *If more than four of the others are answered only the first four answers will be considered. Division of groups is not allowed. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Write a paragraph of about 75 words on the following: Let your purse be your master.

2–3 Write a letter explaining to a girl the charm of baseball *or* to a boy the pleasures of a dolls' tea-party or the fun of 'keeping house'. Use any illustrations that will help your correspondent to see the matter as you see it.

4 Rewrite the following compound sentence, making the first statement the principal clause of a complex sentence; then rewrite again, making one statement a participial phrase:

I had come close to one of the turns of the stair; I felt my way as usual; my hand slipped upon an edge and found nothing but emptiness beyond it.

Compare the two sentences that you have written and state which you prefer and why.

5 Make of the following items one complex sentence:

My flight was of wide compass. My flight extended over plain and mountain. I was soaring in the air. I beheld below me a delightful garden. This garden possessed all kinds of fruits and flowers.

6 Rewrite the following sentence in correct form:

He had good reason to believe that the delay was not an accident but premeditated, and for supposing that the fort, though strong both by art and naturally, would be forced by the treachery of the governor and the indolent general to capitulate within a week.

7 Correct the following sentences and give the reason for each correction:

a Success unduly elates him, and failure casts down in proportion.

6 Rewrite the following letter in correct form:

Albany december 7 Friday N Y.

Mr John Richards No 5 fifth avenue N York city·

My Dear Friend—

Yrs of second recd and contents noted. John Smith has left Albany and is teaching school in otsego co. I dont know where I'll find out and send address. Folks here in usual health except colds &c Will write again Yours &c

7 Condense the following into simple sentences:

(*a*) Waste that is wilful brings want that is woful, (*b*) The book which was borrowed has been returned, (*c*) Some people think that it is the Eastern question which is the really serious problem of to-day, (*d*) It is evident that he is wealthy, (*e*) The friends of the wounded man were hopeful that he would recover.

8 Prepare an outline for an essay on *one* of the following topics, making a subdivision for each paragraph:

(*a*) The result of a sleigh-ride, (*b*) Grandfather's farm, (*c*) An unknown hero.

9 Expand *one* heading of your outline (question 8) into a paragraph of about 75 words.

10–15 Write an essay of not less than 250 words on *one* of the following topics, paying particular attention to introduction and conclusion, sequence of thought, paragraph structure and sentence transition [Essays on subjects other than those assigned will not be accepted]:

(*a*) Sir Roger, a true gentleman [Dwell on the characteristics that mark him as a gentleman], (*b*) The Spectator on party politics, (*c*) How the widow won her suit.

NOTE—Students not familiar with *Sir Roger de Coverley papers* may write on *one* of the following: (*a*) Why young men enlist, (*b*) A touching plea [Some incident in which a child or a pet pleaded for something].

8 Rearrange the following, combining the sentences into *two* distinct paragraphs:

It was the last day of school. The school-house was a low building of one large room. It stood in a rather lonely part of a woody hill. All was bustle and hubbub in the school-room. The scholars hurried through their lessons. They flung their books aside. They rushed out of the school-room, glad to be dismissed for the summer. The school-house was rudely constructed of logs. The windows of the building were partly glazed and partly patched with leaves of old copy-books.

9 Prepare an outline for the essay called for in questions 10–15.

10–15 Write an essay of at least 250 words on *one* of the following topics, paying particular attention to introduction and conclusion, sequence of thought, paragraph structure and sentence transition [Essays on subjects other than those assigned will not be accepted]:

(*a*) The country home of Sir Roger, (*b*) Our club [Suppose yourself present at one of the meetings. Describe some of the members of the club, showing their peculiarities].

NOTE—Students not familiar with *Sir Roger de Coverley papers* may write on *one* of the following: (*a*) The story of a penny, (*b*) A fire.

7 Discuss the meter, feet, cesura, rhyme in each verse of the following stanza:

Art thou pale for weariness
Of climbing heaven and gazing on the earth,
Wandering companionless
Among the stars that have a different birth?

8 State the topic sentence of the following paragraph, and point out the relation of *each* of the remaining sentences to the topic sentence, or to some preceding sentence. What characteristic makes the last sentence a suitable conclusion for the paragraph?

Farming is one of the chief industries in the world. It furnishes employment for laboring men. It increases the commerce, the wealth, and the power of a country. For example, the shipping trade exists chiefly to carry produce from one country to another. By it, food and other necessaries of life are supplied. If it were not for the farmer, how would the city people live? Since farming is so important, it should receive every encouragement from the state.

9 Prepare an outline for an essay on *one* of the following topics, indicating the division into introduction, body, and conclusion, and giving the subdivisions with such definiteness that one can follow your thought from paragraph to paragraph: (*a*) The war with Spain, (*b*) A sunset.

10 Mention and define (*a*) *three* kinds of stanza, (*b*) *two* kinds of rhyme.

11 Revise the following letter of recommendation:

Miss M. Lord,
Troy, N. Y.

Dear Friend:—I recommend, Miss Grey who, has been among my school-mates, as a very good carachter. She is industrious and very studious. She has been employed by Frear &, Co., during the past year. He would gladly attained her, but she seeks a broader climate on account of ill health hoping to hear favorably of you, I remain

Yours truly
A. K. Anderson

12–15 Write an essay of not less than 250 words on *one* of the following topics: (*a*) Street cries, (*b*) Women in the professions, (*c*) American extravagance.

7 Mention and describe the kind of verse used in the following quotation. Mark the scansion to show foot, meter, cesura, and point out the run-on lines:

> Servant of God, well done, well hast thou fought
> The better fight, who single hast maintained
> Against revolted multitudes the cause
> Of truth; in word mightier than they in arms;
> And for the testimony of truth hast borne
> Universal reproach, far worse to bear
> Than violence.

8 Correct the following sentences and state the reason for each correction, giving, where possible, the technical name for the rhetorical defect in the sentence:

(*a*) Seaport towns on the coast are the great marts for selling produce, (*b*) I went home full of a great many serious reflections, (*c*) He spoke most contemptibly of his assistant, (*d*) I can not tell you, if you ask me, why I did it.

9–10 Recast the following extract in proper form:

With this edition of the *Owl* the present editor of this department, having a very generous feeling for my fellow students, and not wishing to see any of them miss the advantage to receive the benefit that is always desired from a good honorable position, and having held the position for over one year, could not conscientiously hold it any longer.

11 Prepare an outline for the essay called for in questions 12–15, indicating the division into introduction, body and conclusion, and giving the subdivisions with such definiteness that the thought may be followed from paragraph to paragraph.

12–15 Write an essay of not less than 250 words on *one* of the following topics [Essays on subjects other than those assigned will not be accepted]: (*a*) A rill from the town pump 50 years later [The town pump says, 'When I shall have decayed, like my predecessors, then, if you revere my memory, let a marble fountain, richly sculptured, take my place.' Suppose the fountain to speak in its turn], (*b*) The mysterious secret [In 'The white old maid' Hawthorne leaves the relation of the two women to the young man a mystery. Write your explanation of this mystery], (*c*) What the landlady's daughter thought of the autocrat.

NOTE—Students not familiar with *Twice-told tales* or ***Autocrat of the breakfast table*** may substitute *one* of the following: (*a*) Meditations of a statue, (*b*) Two points of view [A hungry tramp has helped himself to apples. Give the tramp's view and the view of the owner].

7 Choose *five* of the following pairs of synonyms and distinguish the words of each pair chosen: architect, builder; invite, summon; weep, cry; custom, habit; old, ancient; event, incident; silent, speechless; battle, combat; pride, vanity.

8 Rewrite the following in two or more sentences, paying special attention to clearness of style and unity of construction:

The newsboy has many trials to encounter, wandering through the city all day with torn attire and hungry, and begging persons to buy his papers and receiving harsh replies in return, but worst of all, is going home with little or no money to meet a dozen pale-faced sisters and brothers who are watching for him and dying for something to relieve their hunger.

9 Mark the scansion of the following lines and give the prevailing foot and meter of *each* selection:

a Sweet Hope, celestial influence round me shed,
Waving thy silver pinions o'er my head.

b We are children. Mere kites are the fancies we fly,
Though we marvel to see them ascending so high.

c In your flying, look not downward,
Take good heed, and look not downward,
Lest some strange mischance should happen,
Lest some great mishap befall you!

10 Describe the effect on style of (*a*) a succession of short sentences, (*b*) a succession of long sentences, (*c*) a variety of short and long sentences.

11 Write at least 75 words on *one* of the following topics relating to essay writing: (*a*) introduction, (*b*) conclusion, (*c*) structure of the paragraph, (*d*) collection and arrangement of material.

12–15 Write an essay of at least 250 words on *one* of the following topics [Essays on subjects other than those assigned will not be accepted]: (*a*) Mr Higginbotham's catastrophe [Suppose Dominicus Pike to tell the story to one of his friends], (*b*) A curious company [Describe the meeting in the wagon, as given in the 'Seven vagabonds'], (*c*) My friend the professor [Let the autocrat record in his journal his impressions of the professor].

NOTE—Students not familiar with *Twice-told tales* or *Autocrat of the breakfast table* may substitute *one* of the following: (*a*) Policy of the United States in regard to the Philippines, (*b*) The value of education.

High School Department

157TH EXAMINATION

AMERICAN LITERATURE

Thursday, January 26, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits.* ***Papers entitled to 75 or more credits will be accepted.***

1 State and account for the character of the writings of (*a*) the colonial period, (*b*) the revolutionary period. Give the title and author of *one* work under each period.

2 Give the author of *each* of the following works: (*a*) *Hannah Thurston*, (*b*) *Representative men*, (*c*) *Star-spangled banner*, (*d*) *The spy*, (*e*) *Tales of the grotesque and arabesque*, (*f*) *Walden*, (*g*) *The prince of India*, (*h*) *America*, (*i*) *Potiphar papers*, (*j*) *The chambered nautilus.*

3 Give a sketch of the life of Whittier, mentioning his works in their proper connection with his life.

4 Mention a work by *one* of the following and give a brief sketch of it: (*a*) Harriet Beecher Stowe, (*b*) Richard Harding Davis, (*c*) George W. Cable, (*d*) Frank R. Stockton, (*e*) Nathaniel Hawthorne.

5 Explain the meaning of the following: Irving was the first ambassador whom the new world of letters sent to the old.

6 State what authors have written respectively under the following names: (*a*) Ik Marvel, (*b*) Diedrich Knickerbocker, (*c*) Timothy Titcomb, (*d*) H. H., (*e*) Mark Twain.

Or

Mention *three* famous American translators, and discuss a translation by *one* of them.

7 Give an account of *one* of the following, reciting facts of interest relating to its production: (*a*) *The raven*, (*b*) *Biglow papers*, (*c*) *First Bunker Hill oration*, (*d*) *Commemoration ode.*

8 Mention a representative writer of (*a*) the far west, (*b*) the middle west, (*c*) the south, (*d*) New England, (*e*) New York. Give the title of a work of each writer mentioned.

9 Write a sketch of the life of *one* of the following, mentioning his important works: Benjamin Franklin, Henry Wadsworth Longfellow, Francis Parkman.

10 Give the title of the poem containing the following verses and continue the quotation to the close of the stanza:

Then the Master in his place
Bowed his head a little space,
And the leaves by soft airs stirred,

11 Mention *three* noted American writers who lived in Concord, Mass. Give a sketch of the life of *one* of these writers.

12 Give the author and title of the book in which each of *five* of the following characters appears: Paul Flemming, Penelope Lapham, Chingachgook, Jo March, Felipe Moreno, Nokomis, Titbottom, Katrina Van Tassel, Gabriel Lajeunesse.

BEN-HUR

13 Describe the circumstances under which Ben-Hur was freed from the galleys.

14 State the cause of Ben-Hur's hatred of Messala and his revenge. Was the revenge greater or less than the injury? Explain.

15 What was Ben-Hur's first understanding of the mission of Jesus? In what respect did he change his opinion at a later time?

High School Department

159TH EXAMINATION

AMERICAN LITERATURE

Thursday, June 15, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Describe the conditions that hindered the production of literature in the colonial period. Give an account of the works of *one* of the important writers of this period.

2 Mention *three* noted American writers who were born in New York state. Sketch the life of *one* of these writers.

3 Give the title of an essay, a story or a poem by *each* of the following: (*a*) John G. Saxe, (*b*) Benjamin Franklin, (*c*) Ralph Waldo Emerson, (*d*) Edward E. Hale, (*e*) Josiah Gilbert Holland, (*f*) John Howard Payne, (*g*) Abraham Lincoln, (*h*) George P. Morris, (*i*) Richard Henry Dana, (*j*) Edgar Allan Poe.

4 Write a sketch of a work by *one* of the following: (*a*) Donald G. Mitchell, (*b*) Henry D. Thoreau, (*c*) John G. Whittier.

5 Give the author and title of (*a*) a story for children, (*b*) a poem for children, (*c*) a story of the sea, (*d*) a story of Dutch life, (*e*) a story of Italian life.

6 Give a sketch of the life of Longfellow and account for the popularity of his poetry.

7 Describe the circumstances on which *two* of the following poems were based: (*a*) *Sheridan's ride*, (*b*) *Paul Revere's ride*, (*c*) *Nathan Hale*, (*d*) *Old Ironsides*, (*e*) *Present crisis.*

8 Write a sketch of a leading character in *one* of the following works: (*a*) *Marble faun*, (*b*) *Elsie Venner*, (*c*) *Courtship of Miles Standish*, (*d*) *Ramona.*

9 Mention, with title of work, *one* American historian who has written on *each* of the following: United States, American revolution, Spain, Holland, French in America.

10 Write on *one* of the following topics: (*a*) American professional humorists, (*b*) American writers of dialect, (*c*) American literary critics.

High School Department

157TH EXAMINATION

COURSE IN ENGLISH READING

Friday, January 27, 1899 — 1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *At least five questions must be chosen from the second division. Each answer under the first division will be considered a short (15 minute) theme and will be graded for composition. If more than 10 questions are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

First division 1 Describe the combat between Hector and Achilles as given in the *Iliad.*

2 Write on the kindness, eccentricity, generosity and humor of Sir Roger as illustrated in *Sir Roger de Coverley papers.*

3 Give, from the *Vicar of Wakefield,* a sketch of the adventures of the vicar's eldest son.

4 Give an account of the calamities that befell the ancient mariner.

5 Give an account of the life of Hawthorne.

6 Write the story of Palamon and Arcite as given by Dryden.

7 Describe the rescue of Uncas by Hawkeye.

8 Give an account of Hepzibah's first day of shopkeeping.

9 Give, from De Quincey's *Flight of a Tartar tribe,* the circumstances connected with the arrival of the Kalmucks at the frontiers of China.

Second division 10 Write explanatory notes on *each* of the following from *Paradise lost:*

a That, on the secret top
Of Oreb or of Sinai, didst inspire
That shepherd, who first taught the chosen seed.

b Nor had they yet among the sons of Eve
Got them new names.

c Sage he stood,
With Atlantean shoulders fit to bear
The weight of mightiest monarchies.

d Though heaven be shut,
And heaven's high arbitrator sit secure
In his own strength, this place may lie exposed.

e Thus saying, from her side the fatal key,
Sad instrument of all our woe, she took.

11 State by whom and under what circumstances the following words were spoken, and explain their meaning:

> If it were done when 'tis done, then 'twere well
> It were done quickly: if the assassination
> Could trammel up the consequence, and catch
> With his surcease success; that but this blow
> Might be the be-all and the end-all here,
> But here, upon this bank and shoal of time,
> We'd jump the life to come.

12 Give, from the *Essay on Burns*, Carlyle's description of the songs of Burns, and mention *two* songs to which Carlyle makes special reference.

13 Compare Lady Macbeth's character with that of her husband in respect to (*a*) ambition, (*b*) courage, (*c*) self-control. Justify your answers by references to the play.

14 Give, according to Burke, *three* ways of changing the spirit of the colonists, and state objections to *two* of these ways.

15 Discuss, with illustrations, *Paradise lost*, with reference to *two* of the following: (*a*) meter and rhythm, (*b*) style, (*c*) portrayal of character.

High School Department

159TH EXAMINATION

COURSE IN ENGLISH READING

Friday, June 16, 1899 — 1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *At least five questions must be chosen from the second division. Each answer under the first division will be considered a short (15 minute) theme and will be graded for composition. If more than 10 questions are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

First division

1 Give a description of the Coverley household.

2 Describe the character of Sir William Thornhill as portrayed in the *Vicar of Wakefield.*

3 Give, from the *Iliad*, an account of the circumstances that led to the quarrel between Agamemnon and Achilles.

4 Describe the circumstances attending the first meeting of Palamon and Arcite after their release from prison.

5 Give, from the *Last of the Mohicans*, a sketch of the indian attack on Major Heyward and his party while in the cavern at Glenn's.

6 Describe the dream of Sir Launfal.

7 Give an account of the life of Pope.

8 Describe the return of the ancient mariner to his own country.

Second division

9 Write explanatory notes on *three* of the following from *Macbeth:*

a And oftentimes, to win us to our harm,
The instruments of darkness tell us truths,
Win us with honest trifles, to betray's
In deepest consequence.

b No; this my hand will rather
The multitudinous seas incarnadine,
Making the green one red.

c Approach the chamber, and destroy your sight
With a new Gorgon.

d Ere the bat hath flown
His cloister'd flight, ere to black Hecate's summons
The shard-borne beetle with his drowsy hums
Hath rung night's yawning peal, there shall be done
A deed of dreadful note.

e Macbeth shall never vanquish'd be until
Great Birnam wood to high Dunsinane hill
Shall come against him.

High School Department

159TH EXAMINATION

READING COURSE 2

ENGLISH PROSE

Tuesday, June 13, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Give, from Macaulay's *Essay on Bacon*, an account of Bacon's last days.

2 Relate the story of the astronomer as given in *Rasselas*.

3 Give Locke's views with regard to *one* of the following: (*a*) practice and habits, (*b*) mathematics, (*c*) prejudice.

4 State, from *Thoughts on present discontents*, the effect of the double cabinet system on (*a*) foreign affairs, (*b*) the colonies, (*c*) the temper of the people.

5 Give a sketch of Gibbon's life at Lausanne.

6 Give a brief account of Colonel Newcome's election, and explain why he never took his seat in parliament.

7 Sketch the character of Rashleigh Osbaldistone as given in *Rob Roy*.

8 Describe the escape of Rob Roy from the custody of the duke.

9 Give a sketch of what Carlyle says in *Sartor resartus* on *one* of the following: (*a*) aprons, (*b*) church clothes, (*c*) symbols.

10 Mention and explain the *four* facts that characterized the dreams of De Quincey when he was under the influence of opium.

11 Give a sketch of Paul Dombey's life at Dr Blimber's.

12 State the connection of *each* of the following with the story of *Dombey and son:* Captain Cuttle, Edith, Mr Carker.

13 State Burke's objections to Lord North's plan with regard to the colonies.

14 Give an account of Gulliver's escape from Brobdingnag and of his return home.

15 Give, from Milton's *Areopagitica*, an account of the origin and development of book-licensing.

High School Department

159TH EXAMINATION

READING COURSE 3

ENGLISH POETRY

Wednesday, June 14, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Describe the great closing scene in the life of Dr Faustus.

2 Explain, by references to the poem, the significance of the title *Rape of the lock.*

3 Compare in detail the dream of King Richard with that of the Earl of Richmond the night before the battle of Bosworth field.

4 Give, from Browning's *Blot in the scutcheon*, illustrations of the strength and sympathy shown in the character of Guendolen. [Quotations are not required.]

5 Mention the *six* subjects treated of in Cowper's *Task.* Outline the treatment of *one* of these subjects.

6 Describe the night scene at the pasha's feast as given in the *Corsair.*

7 Give, from *As you like it*, *three* prominent traits of Rosalind's character, showing how these traits were brought out when she played the part of Ganymede.

8 Give an account of the subject-matter of the *Bard.*

9 Sketch the character of Buckingham. State the cause of King Richard's change of attitude toward him.

10 Give, from Wordsworth's *Excursion*, a description of the visit of the Author and the Wanderer to the Solitary in the lonely valley.

11 Explain how the duel between Musgrave and Cranstoun is connected with the story of the *Lay of the last minstrel.*

12 Describe the meeting of Christabel and Geraldine in the woods.

13 Mention *two* literary merits for which the *Cloud* is specially noted, illustrating from the poem.

14 Write on Thomson's *Castle of indolence*, stating what kind of a poem it is, and bringing out the lesson it teaches.

15 To whom is *In memoriam* a tribute? Quote at least *eight* consecutive lines from this poem.

High School Department

157TH EXAMINATION

READING COURSE 4

AMERICAN SELECTIONS

Wednesday, January 25, 1899—1.15 to 4.15 p. m., **only**

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 What led the bystanders at the inn to think that Rip Van Winkle was insane? What *two* incidents finally convinced them that his story was probable?

2 To him who in the love of nature holds
Communion with her visible forms, she speaks
A various language.

What illustrations does Bryant give of this 'various language'?

3 Give in substance Lowell's words concerning Lincoln as found in the *Commemoration ode.*

4 Prove that Whittier was a keen observer of nature either by citing quotations from *Snow-bound* or by giving detailed references to the poem.

5 Expand *one* of the following quotations from the *American scholar* into a paragraph that will fully express Emerson's thought: (*a*) Action is with the scholar subordinate, but it is essential, (*b*) Our day of dependence, our long apprenticeship to the learning of other lands, draws to a close.

6 Were Titbottom's spectacles a treasure or a curse to him? Give a reason for your answer.

7 Sketch Hernando de Soto's visit to Atahuallpa.

8 Describe the effect on Benjamin Franklin of Mr Whitefield's appeal for money.

9 Explain the meaning of Sir Launfal's vision and show how it affected his conduct.

10 Give an account of the interview between Munro and Montcalm concerning the surrender of Fort William Henry, as described in *Last of the Mohicans.*

11 Explain the significance of the title *Autocrat of the breakfast table.* Mention *two* literary merits of this book, justifying your answer by illustrative references.

12 Describe Miriam's behavior after she discovered that the dead monk was her model.

13 Sketch the plan of the third reverie in *Reveries of a bachelor.*

14 Quote at least 10 lines from *one* of the following: *Evangeline, To the humble-bee, Vision of Sir Launfal.*

15 Mention the book of this course that has been most interesting to you; the book that has been of most value to you. Give reasons for your answer.

High School Department

159TH EXAMINATION

READING COURSE 4

AMERICAN SELECTIONS

Wednesday, June 14, 1899 — 1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Describe the circumstances connected with the order of the assembly that 'James Franklin should no longer print the paper called the *New England courant.*' Show how this order affected the life of Benjamin Franklin.

2 Give the story of Ichabod Crane's encounter with the headless horseman.

3 Explain the connection of *each* of the following with the story of the *Last of the Mohicans:* (*a*) Le Renard Subtil, (*b*) Cora Munro, (*c*) David Gamut, (*d*) Duncan Heyward, (*e*) Chingachgook.

4 Explain the meaning of the title *Thanatopsis.* Write a quotation of at least *eight* consecutive lines from this poem.

5 Give, from the *Conquest of Peru,* an account of the capture of the Inca in his own city by Pizarro.

6 Give, from *Snow-bound,* an account of the evening after the storm.

7 Explain the significance of *each* of the following from *Reveries of a bachelor:* (*a*) smoke, (*b*) blaze, (*c*) ashes. Give a sketch of *one* of these chapters.

8 Describe the visit to Mr Sculpin's family portraits, as given in *Prue and I.*

9 Give, from *Backlog studies,* an account of the conversation concerning the clothes question.

10 Mention the work in this course in which *each* of the following is mentioned and state a fact connected with each: (*a*) Nicholas Vedder, (*b*) Mandeville, (*c*) Father Felician, (*d*) Enrica, (*e*) Mr Bourne.

11 Give, from the *Autocrat of the breakfast table*, a sketch of the chapter in which the autocrat and the professor discuss old age.

12 Describe the character of Donatello, showing the change caused by the death of the monk.

13 Give, from the *American scholar*, an account of what Emerson says concerning books.

14 Describe Rip Van Winkle's encounter with Hendrick Hudson and his crew on the Kaatskill mountains.

5 Mention the work from which each of *two* of the following quotations is taken and explain the meaning of each quotation selected:

a Still stands the forest primeval; but under the shade of its branches
Dwells another race, with other customs and language.

b Wiser far than human seer,
Yellow-breeched philosopher!
Seeing only what is fair,
Sipping only what is sweet,
Thou dost mock at fate and care.

c Bow down, dear land, for thou hast found release!
Thy God, in these distempered days,
Hath taught thee the sure wisdom of His ways,
And through thine enemies hath wrought thy peace!

d Little he recked of his earldom's loss,
No more on his surcoat was blazoned the cross,
But deep in his soul the sign he wore,
The badge of the suffering and the poor.

High School Department

159TH EXAMINATION

READING COURSE 5

GERMAN CLASSICS IN ENGLISH

Thursday, June 15, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 The sculptor binds the lower part of the body of Laocoon and leaves the upper part free. What reasons does Lessing give for this?

2 Lessing says in *Laocoon* that the plastic arts require the supervision of the law. Explain this statement.

3 Describe the parting of Dorothea from her friends.

4 Give, from *Hermann and Dorothea*, the pastor's idea of a citizen.

5 To the exclamation of the lay brother, 'You are a Christian, Nathan!' Nathan replies, 'What makes me to you a Christian, makes you to me a Jew.' Explain the meaning of this statement. [*Nathan the Wise*, act 4, scene 7.]

6 State the connection of *each* of the following with the plot of Lessing's *Nathan the Wise:* Saladin, the templar, the lay brother.

7 Describe the interview between Mephistopheles, disguised as Faust, and the student.

8 Describe the scene in Martha's garden in which Gretchen questions Faust as to his religious belief.

9 Explain in detail the meaning of the prince in *Emilia Galotti* when he says to Marinelli: 'Is it not misfortune enough that princes are men; must they also have devils for friends?'

10 Contrast the character of Max Piccolomini with that of Wallenstein.

11 State the connection of *each* of the following characters with the death of Wallenstein: Octavio Piccolomini, Buttler, Gordon.

12 Describe from *Wilhelm Tell* the meeting of the peasants on Rootli meadow.

13 Give an estimate of the character of Wilhelm Tell. Illustrate by incidents drawn from the play.

14 Outline the plot of Freytag's *Debit and credit.*

15 Give the substance of *two* of the following poems from Heine's *Book of songs:* (*a*) The god's twilight, (*b*) Tannhäuser, (*c*) The grenadiers.

High School Department

159TH EXAMINATION

READING COURSE 8

GREEK CLASSICS IN ENGLISH

Friday, June 16, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 State the connection of each of *five* of the following with the story of the *Iliad:* Chryses, Thersites, Paris, Nestor, Diomedes, Andromache, Telamon Ajax.

2 Give an account of the funeral of Patroclus.

3 Give an estimate of the character of Odysseus.

4 Write on *one* of the following from Homer's *Odyssey:* (*a*) council of the gods, (*b*) slaughter of the sun-god's oxen.

5 State briefly the circumstances connected with the recognition of Odysseus by (*a*) Telemachus, (*b*) the dog Argus, (*c*) Odysseus' old nurse, (*d*) Penelope.

6 Give a brief account of *each* of the following characters, and mention the play of Aeschylus in which each appears: Clytemnestra, Aegisthus, Eteocles, Ismene, Hephaestus.

7 Relate the story of Cassandra in *Agamemnon.*

8 Give an account of the part played by the chorus in *Seven against Thebes.*

9 Point out inconsistencies *either* in the story of Oedipus *or* in the character of Creon as treated by Sophocles, to show that the three plays, *Oedipus Tyrannus*, *Oedipus Coloneus* and *Antigone* do not form a continued series but are independent dramas.

10 State, giving reasons, whether, in your opinion, divine vengeance falls justly or unjustly on (*a*) Oedipus, (*b*) Jocaste.

11 Give an estimate of the character of Antigone as portrayed by Sophocles.

12 Give an account of the opening scene in the *Knights*, ending with the entrance of the sausage-seller.

13 Give a brief outline of the story of the *Birds.*

14 Give in substance the argument used by Socrates in the *Crito* of Plato to show that a citizen should render obedience to a state law, even though he thinks the law unjust.

15 In *De corona* Demosthenes says: 'In this trial Aeschines has many advantages over me; two in particular.' Mention and discuss these two advantages.

forma de sa santé. "Je me porte très bien, Monseigneur, et quoique je sois prisonnier, je suis le chevalier le plus honoré du monde."—"Comment cela?" demanda le Prince.—"On dit," reprit Du Guesclin, "que vous avez si peur de moi que vous n'osez pas me mettre en liberté; c'est la raison pour laquelle je me considère si honoré." Le Prince ne fut pas satisfait de cette réponse, car il savait qu'elle était vraie. Néanmoins il offrit la liberté au chevalier moyennant rançon.

néanmoins = nevertheless, *moyennant* = for, *rançon* = ransom

7 Translate into French:

a The soldiers of Napoleon were very brave.
b He was the first man that bought this new book.
c Henry the Fourth is said to have been ill at that time.
d Where have you been all day? At home?
e When will you be ready to go with me?

8 Conjugate the imperfect subjunctive of ***pardonner;*** the present indicative of ***réussir;*** the future of ***recevoir.***

9 Indicate the gender of *each* of the following: ***parapluie***, *imagination*, *lendemain*, *printemps*, *janvier*, *charité*, *Amérique*, *chaleur*, *cousin*, *collége*.

10 Translate into English: (*a*) Il s'agit de la guerre, (*b*) Vous avez beau faire cela, (*c*) Vous devez avoir faim et soif. (*d*) Je viens de l'expliquer, (*e*) Il trembla de nouveau, (*f*) Que deviendra-t-il loin de sa mère? (*g*) Il faut aimer votre fils, (*h*) Que ces femmes sont tristes! (*i*) Il y a vingt-cinq ans de cela, (*j*) Il s'en alla.

11 Answer the following questions by complete French sentences: (*a*) Depuis quand êtes-vous ici? (*b*) Quand fait-il froid? (*c*) Où avez-vous appris le français? (*d*) Dans quel pays êtes-vous né? (*e*) Avez-vous beaucoup voyagé?

12 Give the second person, singular and plural, of (*a*) the present indicative of *aller*, (*b*) the present conditional of *boire*, (*c*) the future of *venir*, (*d*) the present subjunctive of *cacheter*, (*e*) the imperfect subjunctive of *connaître*.

13 Write the feminine of *premier*, *vieux*, *cruel*, *ancien*, *frais;* the plural of *fils*, *ciel* (heaven), *bétail*, *portail*, *feu* (fire)

14 Give the rule for the agreement of the past participle of a verb when it is conjugated (*a*) with *avoir*, the direct object preceding the verb, (*b*) with *avoir*, the direct object not preceding the verb, (*c*) with *être*.

15 Write from memory Victor Hugo's *La tombe dit à la rose.*

Si ce malheur illustre ébranlait l'un de vous,
Je le désavouerais pour frère ou pour époux.
Pourrais-je toutefois vous faire une prière
Digne d'un tel époux, et digne d'un tel frère?
Je veux d'un coup si noble ôter l'impiété,
A l'honneur qui l'attend rendre sa pureté,
La mettre en son éclat sans mélange de crimes;
Enfin, je vous veux faire ennemis légitimes.—*Corneille*

7 Translate into French: Paris seems to me to offer the greatest resources to the mind and the fewest to the soul. My mind is joyful there but my soul is sad. In every phase of Parisian life I am made to feel that here one can cultivate only the mind and that even its most lofty pleasures are not sufficient to satisfy the soul.

8 Translate into English: (*a*) Comment, pendard! tu as l'audace d'aller sur mes brisées! (*b*) Pour aller ainsi vêtu, il faut bien que vous me dérobiez, (*c*) Vous savez que de mon naturel je suis assez humaine, (*d*) Je trouve en votre personne de quoi avoir raison aux choses que je fais pour vous, (*e*) Il est bon de lui tenir un peu la bride haute.

9 Translate into French: (*a*) This is a proof convincing to everybody, (*b*) The ladies that we have just met are Americans, (*c*) About 10 o'clock they presented themselves at their friend's house, (*d*) These are the pictures which I have seen painted, (*e*) This is the affair of which they have already spoken.

10 Write in French about 75 words on the life and works of Bossuet or Rousseau.

11 Translate into French [Do not use figures]: If Madame de Sévigné called Louis 14 a great king, it was not, as Bussy says, because he had just danced with her. She loved glory; and Louis 14 was the most brilliant personification of it, in that he seemed to sum up, in himself alone, all the glories of his age.

12 Translate into French: (*a*) However praiseworthy your conduct may be, it will be condemned, (*b*) Whatever virtues they may have, they are not charitable, (*c*) Whatever talents you may have, you can not succeed in this, (*d*) Whoever you may be, I will do what I can to help you, (*e*) Let nobody whatever enter this room.

13 Write the second person, singular and plural, of (*a*) the present indicative of *acquérir*, (*b*) the preterit of *nuire*, (*c*) the imperfect subjunctive of *plaire*, (*d*) the imperfect subjunctive of *adjoindre*, (*e*) the present indicative of *croître*.

14 Write the plural form of *each* of the following: *tête-à-tête*, *Hôtel-Dieu*, *chef-lieu*, *timbre-poste*, *abat-jour*, *banlieue*, *ver-luisant*, *essuie-main*, *corail*, *bétail*.

15 Write from memory and translate the last stanza of Rouget de Lisle's *La Marseillaise*.

Tous doivent à la fois précipiter leurs pas,
Et crier pour signal: Vive le roi Joas!
Mais mon père défend que le roi se hasarde,
Et veut qu'Azarias demeure pour sa garde.
Cependant Athalie, un poignard à la main,
Rit des faibles remparts de nos portes d'airain.
Pour les rompre, elle attend les fatales machines,
Et ne respire enfin que sang et que ruines.
Quelques prêtres, ma sœur, ont d'abord proposé
Qu'en un lieu souterrain, par nos pères creusé,
On renfermât du moins notre arche précieuse.—*Racine*

7 Translate into French: I was a little more than six years old when I began to read the plays of Shakspere. They were contained in two large volumes, on which I used to sit at the dinner table. In these volumes I read all the historic dramas of the great English poet.—*Bourget*

8 Write the past participle of *each* of the following: *croire*, *croître*, *plaire*, *pleuvoir*, *absoudre*, *moudre*, *ceindre*, *clore*, *coudre*, *mouvoir*.

9 Write in French about 75 words on the life and works of Racine.

10 Translate into English: (*a*) Il commençait à se faire à l'atmosphère du lieu, (*b*) On ne doit ni se moquer ni s'inquiéter des qu'en dira-t-on, (*c*) Voici déjà trois heures qui sonnent: adieu, je me sauve, (*d*) Allez faire un petit tour, et votre migraine s'en trouvera mieux, (*e*) Après tout, est-ce que cela ne revient pas au même?

11 Write in French about 75 words descriptive of school life.

12 Write French sentences, not found on this paper, illustrating *three* distinct uses of the subjunctive. Mention *four* conjunctions that are always followed by the subjunctive.

13 Fill the blank in *each* of the following sentences with either *c'* or *il*, giving in each case the reason for your choice: (*a*)   est trois heures et demie, (*b*)   est certain qu' il viendra, (*c*) La plus grande des vertus   est la charité, (*d*)   est moi, (*e*)   est le plus beau garçon de la ville.

14 Distinguish between the use of *quel* and *lequel*, *que* and *quoi* as interrogatives.

15 Write from memory and translate *two* consecutive stanzas of Rouget de Lisle's *La Marseillaise*.

5–6 Translate into English:

ASCHENPUTTEL

Da warf ihm (dem Mädchen) der Vogel ein golden und silbern Kleid herunter und ein Paar mit Seide und Silber ausgestickte Pantoffeln. Alsbald zog es Kleid und Pantoffeln an und ging zur Hochzeit. Seine Schwestern aber und die Stiefmutter erkannten es nicht und meinten, es müfste eine fremde Königstochter sein, so schön sah es in dem goldenen Kleide aus. An Aschenputtel dachten sie gar nicht und glaubten, es läge daheim im Schmutz. Der Königssohn kam ihm entgegen, nahm es bei der Hand und tanzte mit ihm. Er wollte auch mit sonst niemand tanzen, also dafs er ihm die Hand nicht los liefs, und wenn ein anderer kam, es aufzufordern, sprach er: "Das ist meine Tänzerin."—*Grimm*

Aschenputtel = Cinderella, *aussticken* = embroider, *Hochzeit* = wedding, *erkennen* = recognize, *auffordern* = ask

7 Translate into German:

a The proud stepsisters hated poor little Cinderella.
b Why will you not dance with me?
c I should like to live in England.
d How far is it from Buffalo to New York?
e I have never seen such a man.

8 Write German sentences illustrating the use of *each* of the following prepositions: *laut*, *diesseits*, *um*, *nächst*, *bei*.

9 Give the synopsis of *reden* in the third person singular of the indicative and subjunctive, active. Conjugate *bleiben* in the present indicative active, in the imperfect subjunctive active.

10 Decline the interrogatives *wer* and *was*; the German for *the cool night*, *my book*, in both singular and plural.

11 Answer the following questions by complete German sentences: (*a*) Von welchem Geschlecht ist das Wort Sonne? (*b*) Wer geht in die Schlacht? (*c*) Welche Vorsylben sind untrennbar? (*d*) Von welchem Geschlecht sind die Hauptwörter welche die Endsylbe *ung* haben? (*e*) Wie nennt man die 10 ersten Zahlwörter?

12 Write the principal parts of *antworten*, *gleiten*, *essen*, *fallen*, *sitzen*.

13 Compare *lahm*, *rot*, *gehorsam*, *gut*, *viel*.

14 Translate into German: (*a*) They have fallen, (*b*) He is gone, (*c*) I have been, (*d*) We have remained, (*e*) This is broken, (*f*) The bird has flown, (*g*) We have gone, (*h*) I follow him, (*i*) The trees have become green, (*j*) I help you.

15 Write from memory and translate 10 consecutive lines of *any* German poem.

5–6 Translate into English:

DIE PRINZESSIN, DIE NICHT LACHEN WOLLTE

Eines Tages, als er Wasser holen wollte, sah er einen groſsen Fisch in dem Brunnen. Der Fisch lag so still im Wasser, daſs der Jüngling ihn in seinem Eimer fangen konnte. Als er mit dem Fische in dem Eimer nach Hause ging, begegnete er einer alten Frau, die eine goldene Gans an einer Schnur führte.

"Guten Tag, gute Frau. Sie haben da eine wunderschöne Gans, und ihre Federn sind auch wunderschön."

"Ja," sagte die alte Frau, "meine goldene Gans ist schön, aber Ihr Fisch ist noch schöner."

"Ach!" sagte der Jüngling. "Ich will Ihnen den Fisch für die goldene Gans geben."—*Guerber*

holen = draw, *Brunnen* = well, *Eimer* = pail, *Schnur* = cord

7 Translate into German:

a There is a knock on the door.

b This is fine weather, is it not?

c That town is not far away.

d I have walked 10 miles.

e The trees have lost their leaves.

8 Write the principal parts of *müssen*, *beiſsen*, *fahren*, *flieſsen*, *schlafen*.

9 Write the second and the third person singular of the present indicative of *mögen*, *werden*, *wachsen*. Compare *stolz*, *dunkel*.

10 Give the reason for the order in the sentence of each italicized word in the following: Als er den Hund *sah*, *fing* er *sogleich* nach Hause *schnell* zu laufen *an*.

11 Fill each blank space in the following with the correct inflection: Kurz   Zeit nach d   Tod   d   Komponist   Meyerbeer, kam ein Neffe d   selb   zu Rossini und bat dies   um die Erlaubnis, ih   ein   Trauermarsch vorspielen zu dürfen.

12 Translate into German: (*a*) What is the matter with you? (*b*) It is only a quarter to six, (*c*) I beg your pardon, (*d*) It is already growing dark, (*e*) My head aches.

13 Decline in singular and plural (*a*) *die gute Frau*, (*b*) *mein neues Haus*.

14 Conjugate the present subjunctive of *wohnen;* the imperfect subjunctive of *denken*. Give the synopsis of *sehen* in the first person plural of the indicative and subjunctive active.

15 Write from memory *Du, du liegst mir am Herzen.*

5–6 Translate into English:

DER AUSREISSER

Am Abend vor einer Schlacht begegnete Friedrich der Groſse einem seiner Soldaten, der als Ausreiſser gefangen und zurückgebracht worden war. "Warum hast du mich verlassen wollen?" fragte ihn der König. "Weil die Sachen ihrer Majestät in einer sehr schlimmen Lage sind," antwortete der Soldat. Es war die Wahrheit und der König antwortete: "Du hast recht, mein Sohn; aber warte bis morgen, und wenn die Sachen dann nicht besser aussehen, so gehe ich mit; dann wollen wir zusammen davonlaufen." Dann schickte er ihn zurück zu seinem Regimente. Am nächsten Tage gewann der König einen Sieg und der Soldat war unter den Tapfersten, so daſs niemand mehr vom Davonlaufen sprach.

Ausreiſser = deserter, *schlimm* = bad, *Lage* = condition, *Sieg* = victory

7 Translate into German:

(*a*) Please give me a few flowers, (*b*) My sister is not at home, (*c*) This chair belongs to my brother, (*d*) I have forgotten my hat, (*e*) What day of the month is it?

8 Write the genitive singular and the nominative plural, with article, of *Vater*, *Hand*, *Blatt*, *Name*, *Nachbar*.

9 Write the principal parts of *bitten*, *dürfen*, *fliegen*, *schlagen*, *schreiben*.

10 Decline in both singular and plural *der jüngste Sohn*, *ihr groſses Buch*.

11 Give the synopsis of *mögen* in the third person singular of the indicative and subjunctive, active. Conjugate *reden* in the imperfect indicative active, in the present subjunctive active.

12 Compare *froh*, *alt*, *bedeutend*. Form an adverb from *each* of the following: *frei*, *oft*, *lang*, *zwei*.

13 Write complete German sentences containing the following verbs: *anfangen*, *beginnen*, *lassen*, *müssen*, *verlangen*.

14 Translate into German: (*a*) Send me another book, (*b*) Yesterday it rained, (*c*) That is a pity, (*d*) I thank you, (*e*) How do you do?

15 Write from memory Uhland's *Der Wirtin Töchterlein*.

oben die Seligen zwischen den Sternen spazieren gehen, und die Menschen grüfsten hinauf und die Seligen grüfsten herunter. Das Schönste aber war die wundervolle Musik, die damals aus dem Himmel sich hören liefs. Der liebe Gott hatte dazu die Noten selber aufgeschrieben, und tausend Engel führten sie mit Geigen, Pauken und Trompeten auf.—*Leander*

Geige = violin, *Pauke* = kettledrum

7 Translate into German:

a He is not only rich, but also very learned.

b He answered me that he did not speak German.

c My neighbor intended to sell his house in order to pay his debts.

d It is unsafe to associate with such persons as those of whom you speak.

e In view of these facts he could not judge otherwise.

8 Write the principal parts of *sieden*, *steigen*, *werben*, *flechten*, *hauen*.

9 Write and translate complete German sentences, of at least five words each, containing (*a*) the present indicative of *sich beklagen*, (*b*) the imperfect subjunctive of *sich bekümmern*, (*c*) the future indicative of *sich erbarmen*, (*d*) the perfect indicative of *sich hüten*, (*e*) the present subjunctive of *sich sehnen*.

10 Translate into German: (*a*) It grew dark, (*b*) He took me by the hand, (*c*) The sun set, (*d*) It occurs to me, (*e*) She asked me to help her, (*f*) What does it matter? (*g*) Whose fault is it? (*h*) He departed without informing me of it, (*i*) the best in the world, (*j*) as well as I could.

11 Mention (*a*) *three* coordinate conjunctions, (*b*) *five* subordinate conjunctions. State the effect of each class on the word order of a German sentence or clause.

12 Mention *five* prepositions that govern either the dative or accusative and write complete German sentences illustrating both uses of each preposition.

13 Write complete German sentences containing (*a*) *two* verbs with different separable prefixes, (*b*) *two* verbs with different inseparable prefixes, (*c*) *one* verb with a prefix that may be either separable or inseparable, and give the difference in meaning between the separable and inseparable form.

14 Translate into idiomatic English: (*a*) Sie ist unter der Arbeit eingeschlafen, (*b*) Sie sind von Wonne trunken, (*c*) Sie ging gerade auf ihn zu, (*d*) Es geht alles ziemlich gut von Statten, (*e*) Ich habe ihn schon seit einem Jahre nicht zu Gesichte bekommen.

15 Write from memory and translate 10 consecutive lines of any German poem.

auf den grünen Zweig komme, so thu' ich mir etwas zu Leid.; wär' ich doch nur so angesehen und reich, wie der dicke Ezechiel, oder so kühn und so gewaltig, wie der lange Schlurker, oder so berühmt, und könnte den Musikanten Thaler statt Kreuzer zuwerfen, wie der Tanzbodenkönig! Wo nur der Bursche das Geld her hat?" Allerlei Mittel ging er durch, wie man sich Geld erwerben könne, aber keines wollte ihm gefallen; endlich fielen ihm auch die Sagen von Leuten bei, die vor alten Zeiten durch den Holländer Michel und durch das Glasmännlein reich geworden waren.—*Hauff*

Schenke = tavern, *angesehen* = respected, *Mittel* = remedy

7 Translate into German:

a When the soldiers came into the city, the people did not know what to do.

b Let us take a walk in the woods before the sun sets.

c He said that we should start early in the morning if we wished to reach Berlin by daylight.

d You promised me that you would answer my last letter without delay.

e I regret that I did not find you at home when I called.

8 Give the principal parts of *heben*, *dingen*, *schaffen*, *lügen*, *schelten*.

9 Translate into English: (*a*) Es macht nichts aus, (*b*) Was könnte sonst dich aus der Fassung bringen, (*c*) Er nimmt Jedermann beim Worte, (*d*) Es geht dich nur zur Hälfte an, (*e*) Die gute Gräfin liefs nicht auf sich warten.

10 Give *five* separable prefixes. Write complete German sentences containing *five* verbs not found on this paper, each having a different separable prefix.

11 Write complete German sentences not found on this paper, containing (*a*) a dependent clause used as the subject of a verb, (*b*) a dependent clause qualifying a noun, (*c*) a dependent clause qualifying a verb.

12 Mention (*a*) *two* uses of the subjunctive, (*b*) *three* uses of the infinitive. Write an original German sentence illustrating each.

13 Give (*a*) the synopsis of *machen* in the third person singular of the indicative and subjunctive, active, (*b*) the second and the third person singular of the present indicative active of *sprechen*, *schlafen*, *essen*, *geben*.

14 Translate into German: (*a*) May I go with you? (*b*) My head aches, (*c*) He would like to write a letter, (*d*) His name is John, (*e*) What is the matter with you?

15 Write from memory and translate the first *three* stanzas of Goethe's *Erlkönig*.

matik und Virgilius ruhten. Sie scherzte mit Praxedis über die Schulmeister in Konstantinopel angelegentlicher denn früher. Ekkehard fragte an, ob er zur Fortsetzung des Unterrichtes sich einstellen solle. Ich habe Zahnweh, sprach die Herzogin. Die rauhe Spätherbstluft werde Schuld daran sein, meinte er bedauernd.

Er fragte jeden Tag etlichemale nach seiner Gebieterin Befinden. Das rührte die Herzogin wieder. Woher kommt's, sprach sie einmal zu Praxedis, daſs einer mehr wert sein kann, als er selber aus sich zu machen weiſs.—*Scheffel*

7 Translate into German: We could neither go on nor stand still, and we were obliged every moment to grasp some little tree in order to be able to remain on our feet at all. You know that I am not timid, but I can assure you that it was no joke. Perhaps you will say, 'It served you right, you should have remained in the inn.'

8 Translate into English: (*a*) Zwar bin ich seit geraumer Zeit übern Fuſs mit ihm gespannt, (*b*) Was wäre wohl leichter als des Saladin sich zu bemächtigen, den Garaus ihm zu machen, (*c*) Ein ehrlicher Soldat legt sich auch nicht aufs Denunzieren, selbst wenn es sich um seinen Todfeind handelt, (*d*) Mich befiel eine furchtbare Angst wenn Riegner entdeckt wurde, (*e*) Das Herz schlug mir so daſs ich beinahe um den Verstand kam.

9 Write in German about 75 words on *one* of Schiller's plays.

10 Give *five* nouns that belong to the strong declension in the singular and to the weak declension in the plural.

11 Write in German about 75 words on the life of Goethe.

12 Translate into German: The first German book of which we know is the translation of the Bible by the Gothic bishop Ulfilas. He left out the books of Kings because he feared the Goths might be excited by reading these books. Part of an old copy of this translation is kept in the university of Upsala. It is written with silver letters on scarlet colored parchment.

translation of the Bible = *Bibelübersetzung*, scarlet colored = *purpurgefärbt*, parchment = *Pergament*

13 State the meaning of *each* of the following prefixes, and mention at least *one* other verb compounded with each: *er*wehren, *ge*stehen, *ent*schlafen, *voll*enden, *zer*reiſsen.

14 Translate into German: (*a*) Instead of reading he worked, (*b*) He is considered the finest man in the army, (*c*) In spite of this people are still living there, (*d*) We held on by the chain, (*e*) Remind me of the poor child, (*f*) easier than one might have thought, (*g*) not only his face but also his speech, (*h*) at his work, (*i*) on the banks of the Rhine, (*j*) the battle of Waterloo.

15 Write from memory and translate the last *two* stanzas of Hauff's *Reiters Morgengesang.*

Beliebt, des Kaisers General zu bleiben,
Und bin des Friedlands Knecht, sobald es ihm
Gefallen wird, sein eigner Herr zu sein.
Terzky—Ihr treffet einen guten Tausch. Kein Karger,
Kein Ferdinand ist's, dem ihr euch verpflichtet.
Buttler (ernst)—Ich biete meine Treu nicht feil, Graf Terzky,
Und wollt' euch nicht geraten haben, mir
Vor einem halben Jahr noch abzudingen,
Wozu ich jetzt freiwillig mich erbiete.—*Schiller*
Klausel = clause

7 Translate into German:
After the death of his brother, Charles the Great ruled over the whole Frankish empire. But the power which he had inherited from his ancestors did not satisfy the mind of this great man. He wished to unite all the people of the west in one Christian empire, and with iron will he pursued this object during the long continuance of his rule.

8 Translate into English: (*a*, *b*) Wenn ich ihr Herz verloren habe, was liegt daran ob mich Gleichgültigkeit oder mächtigere Reize darum gebracht? (*c*) Ein Briefchen von meinem Herrn an das gnädige Fräulein, das seine Schwester sein will, (*d*) So blieben sie fest bei der Stange, ihr gegebenes Wort zu lösen, (*e*) Es ward ihnen unheimlich bei diesen Menschen, so dafs sie dem Drängen ihrer Frauen, welche fort wollten, nachgaben.

9 Write in German about 75 words on the life and works of *one* of the following: Heine, Uhland.

10 Mention *five* German verbs that are followed by the genitive. Write German sentences containing the verbs mentioned.

11 Give both plurals of *each* of the following and the meaning of each plural: *Bank*, *Gesicht*, *Licht*, *Zoll*, *Ort*.

12 Write in German about 75 words on the value of a knowledge of German.

13 Translate into German: Soldier Fritz was the name of a bright, active boy, the son of a corporal in the Prussian army. He was so named, in the first place, because his father was a soldier; in the second place, because he was very fond of playing soldier; and in the third place, because Fritz was his Christian name.

14 Translate into German: (*a*) He went through the streets looking at everything he saw, (*b*) The fear of losing his good name prevented him from acting differently, (*c*) A man that does good to everyone is highly esteemed, (*d*) It must have been quite cold last night, as the water was frozen this morning, (*e*) Without knowing me at all they presumed to address me.

15 Write from memory and translate the first *two* stanzas of Goethe's *Der Fischer*.

12 Give the syntax of Βαβυλωνίας, σταθμοὺς, ἐξέτασιν, βασιλέα. State where *each* of the following forms is found: ἐξελαύνει, ἐδόκει.

13 Translate into English:

a Κλέαρχος ἐκέλευσε τοὺς στρατιώτας προϊέναι.

b Τῇ αὐτῇ ἡμέρᾳ ὁ βασιλεὺς ἦλθε παρὰ τὸ στρατόπεδον.

c Ἐὰν οἱ Ἕλληνες νικήσωσι, ἡμεῖς ἕξομεν χρήματα καὶ ὅπλα.

14 Write Greek sentences illustrating *three* of the following: indirect object, predicate genitive, clause of result, genitive absolute, accusative of specification.

15 Translate into Greek:

a I shall not take gifts from the general.

b Let us besiege the city of the enemy.

c These hoplites were plotting against the friends of Cyrus.

d Cyrus and the cavalry came during the night.

University of the State of New York

High School Department

157TH EXAMINATION

XENOPHON'S ANABASIS

Friday, January 27, 1899—9.15 a. m. to 12.15 p. m., only

Answer the first six questions and four of the others but **no more.** *If more than four of the others are answered only the first four answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1–5 Translate into English:

a YOUTH OF CYRUS

Πρῶτον μὲν γὰρ ἔτι παῖς ὤν, ὅτε ἐπαιδεύετο καὶ σὺν τῷ ἀδελφῷ καὶ σὺν τοῖς ἄλλοις παισί, πάντων πάντα κράτιστος ἐνομίζετο. Πάντες γὰρ οἱ τῶν ἀρίστων Περσῶν παῖδες ἐπὶ ταῖς βασιλέως θύραις παιδεύονται· ἔνθα πολλὴν μὲν σωφροσύνην καταμάθοι ἄν τις, αἰσχρὸν δ' οὐδὲν οὔτ' ἀκοῦσαι οὔτ' ἰδεῖν ἔστι. Θεῶνται δ' οἱ παῖδες καὶ τρὺς τιμωμένους ὑπὸ βασιλέως καὶ ἀκούουσι, καὶ ἄλλους ἀτιμαζομένους.—1, 9

b REPLY OF PHALINUS

Ἐγώ, εἰ μὲν τῶν μυρίων ἐλπίδων μία τις ὑμῖν ἐστι σωθῆναι πολεμοῦντας βασιλεῖ, συμβουλεύω μὴ παραδιδόναι τὰ ὅπλα· εἰ δέ τοι μηδεμία σωτηρίας ἐστὶν ἐλπὶς ἄκοντος βασιλέως, συμβουλεύω σώζεσθαι ὑμῖν ὅπῃ δυνατόν. Κλέαρχος δὲ πρὸς ταῦτα εἶπεν· Ἀλλὰ ταῦτα μὲν δὴ σὺ λέγεις· παρ' ἡμῶν δὲ ἀπάγγελλε τάδε, ὅτι ἡμεῖς οἰόμεθα, εἰ μὲν δέοι βασιλεῖ φίλους εἶναι, πλείονος ἂν ἄξιοι εἶναι φίλοι ἔχοντες τὰ ὅπλα ἢ παραδόντες ἄλλῳ.

—2, 1

c SPEECH OF XENOPHON

Κράτιστον, ὦ Χειρίσοφε, ἡμῖν ἴεσθαι ὡς τάχιστα ἐπὶ τὸ ἄκρον· ἢν γὰρ τοῦτο λάβωμεν, οὐ δυνήσονται μένειν οἱ ὑπὲρ τῆς ὁδοῦ. Ἀλλά, εἰ βούλει, μένε ἐπὶ τῷ στρατεύματι· ἐγὼ δ' ἐθέλω πορεύεσθαι· εἰ δὲ χρῄζεις, πορεύου ἐπὶ τὸ ὄρος, ἐγὼ δὲ μενῶ αὐτοῦ. Ἀλλὰ δίδωμί σοι, ἔφη ὁ Χειρίσοφος, ὁπότερον βούλει ἑλέσθαι. Εἰπὼν ὁ Ξενοφῶν ὅτι νεώτερός ἐστιν, αἱρεῖται πορεύεσθαι.—3, 4

6 Translate into Greek:

a If you give up your arms to the king you will give them up against my will.

b Clearchus advised Cyrus to proceed as quickly as possible in order that the army of the king might not cross the river.

7 Give the reason for the case of πάντων (*a*, 2), πάντα (*a*, 2), ὑμῖν (*b*, 1), βασιλέως (*b*, 3), βασιλεῖ (*b*, 5), πλείονος (*b*, 6), ἡμῖν (*c*, 1); for the mode of καταμάθοι (*a*, 4), δέοι (*b*, 5), λάβωμεν (*c*, 2).

8 Give the syntax of ἰδεῖν (*a*, 5), σωθῆναι (*b*, 1), ἑλέσθαι (*c*, 5). Classify the following participles: ὤν (*a*, 1), ἔχοντες (*b*, 6). Decline πάντων (*a*, 2) in the singular in all genders. Compare πλείονος (*b*, 6), κράτιστον (*c*, 1).

9 From what verb is each of the following and where is the form found: ἀκοῦσαι (*a*, 5), παραδόντες (*b*, 6), ἴεσθαι (*c*, 1), μενῶ (*c*; 4), ἑλέσθαι (*c*, 5)?

10 Write the principal parts of καταμάθοι (*a*, 4), ἀκοῦσαι (*a*, 5), ἀπάγγελλε (*b*, 5), παραδόντες (*b*, 6), ἴεσθαι (*c*, 1).

11 Conjugate ἐστὶν (*b*, 3), πορεύου (*c*, 3) in the voice, mode and tense here found. Give the first form of each mode including participle of λέγεις (*b*, 4) in the voice and tense here found. Decline παῖδες (*a*, 3) in the plural.

12 Explain the force of ἔτι (*a*, 1), δέ (*b*, 2), γὰρ (*c*, 1). Account for the accent of ἔστι (*a*, 5). Explain the difference in meaning between βούλει (*c*, 2) and ἐθέλω (*c*, 3).

13 Translate the verb *say* by *three* different verbs, indicating the construction regularly used after each. Distinguish in meaning between the active and the middle voice of ἵημι, αἱρέω.

14 Give the composition of each of the following words and the meaning of each part: μηδεμία (*b*, 2), ἄκοντος (*b*, 3). Give, with meaning, the Greek words from which each of the following is derived: geology, anachronism, phonograph.

15 Translate into English [This must be taken by those who desire credit for the fourth book]:

SUFFERINGS OF THE GREEKS

Ὅσοι δὲ ὑποδεδεμένοι ἐκοιμῶντο, εἰσεδύοντο εἰς τοὺς πόδας οἱ ἱμάντες καὶ τὰ ὑποδήματα περιεπήγνυντο· καὶ γὰρ ἦσαν, ἐπειδὴ ἐπέλιπε τὰ ἀρχαῖα ὑποδήματα, καρβάτιναι αὐτοῖς πεποιημέναι ἐκ τῶν νεοδάρτων βοῶν. Διὰ τὰς τοιαύτας οὖν ἀνάγκας ὑπελείποντό τινες τῶν στρατιωτῶν· καὶ ἰδόντες μέλαν τι χωρίον διὰ τὸ ἐκλελοιπέναι αὐτόθι τὴν χιόνα, εἴκαζον τετηκέναι. Καὶ τετήκει διὰ κρήνην τινὰ ἣ πλησίον ἦν ἀτμίζουσα ἐν νάπῃ· ἐνταῦθ' ἐκτραπόμενοι ἐκάθηντο καὶ οὐκ ἔφασαν πορεύεσθαι. — 4, 5

University of the State of New York

High School Department

159TH EXAMINATION

XENOPHON'S ANABASIS

Friday, June 16, 1899—9.15 a. m. to 12.15 p. m., only

Answer the first six questions and four of the others but **no more.** *If more than four of the others are answered only the first four answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1–5 Translate into English:

a SYENNESIS LEAVES THE PASS

Ἐλέγετο δὲ καὶ Συέννεσις εἶναι ἐπὶ τῶν ἄκρων φυλάττων τὴν εἰσβολήν· διὸ ἔμεινεν ἡμέραν ἐν τῷ πεδίῳ. Τῇ δ' ὑστεραίᾳ ἧκεν ἄγγελος λέγων ὅτι λελοιπὼς εἴη Συέννεσις τὰ ἄκρα, ἐπεὶ ᾔσθετο τό τε Μένωνος στράτευμα ὅτι ἤδη ἐν Κιλικίᾳ ἦν εἴσω τῶν ὀρέων, καὶ ὅτι τριήρεις ἤκουε περιπλεούσας ἀπ' Ἰωνίας εἰς Κιλικίαν Ταμὼν ἔχοντα τὰς Λακεδαιμονίων καὶ αὐτοῦ Κύρου. Κῦρος δ' οὖν ἀνέβη ἐπὶ τὰ ὄρη, οὐδενὸς κωλύοντος, καὶ εἶδε τὰς σκηνὰς οὗ οἱ Κίλικες ἐφύλαττον.—1, 2

b REPLY OF PHALINUS TO THEOPOMPUS

Ἀλλὰ φιλοσόφῳ μὲν ἔοικας, ὦ νεανίσκε, καὶ λέγεις οὐκ ἀχάριστα· ἴσθι μέντοι ἀνόητος ὤν, εἰ οἴει ἂν τὴν ὑμετέραν ἀρετὴν περιγενέσθαι τῆς βασιλέως δυνάμεως. Ἄλλους δέ τινας ἔφασαν λέγειν ὑπομαλακιζομένους ὡς καὶ Κύρῳ πιστοὶ ἐγένοντο καὶ βασιλεῖ γ' ἂν πολλοῦ ἄξιοι γένοιντο, εἰ βούλοιτο φιλος γενέσθαι· καὶ εἴτε ἄλλο τι θέλοι χρῆσθαι, εἴτ' ἐπ' Αἴγυπτον στρατεύειν, συγκαταστρέψαιντ' ἂν αὐτῷ.—2, 1

c DIFFICULTIES ON THE MARCH

Οἱ δὲ βάρβαροι ἱππεῖς καὶ φεύγοντες ἅμα ἐτίτρωσκον, εἰς τοὔπισθεν τοξεύοντες ἀπὸ τῶν ἵππων· ὁπόσον δὲ προδιώξειαν οἱ Ἕλληνες, τοσοῦτον πάλιν ἐπαναχωρεῖν μαχομένους ἔδει. Ὥστε τῆς ἡμέρας ὅλης διῆλθον οὐ πλέον πέντε καὶ εἴκοσι σταδίων, ἀλλὰ δείλης ἀφίκοντο εἰς τὰς κώμας. Ἔνθα δὴ πάλιν ἀθυμία ἦν. Καὶ Χειρίσοφος καὶ οἱ πρεσβύτατοι τῶν στρατηγῶν Ξενοφῶντα ᾐτιῶντο ὅτι ἐδίωκεν ἀπὸ τῆς φάλαγγος, καὶ αὐτός τε ἐκινδύνευε καὶ τοὺς πολεμίους οὐδὲν μᾶλλον ἠδύνατο βλάπτειν.—3, 3

6 Translate into Greek:

a The cavalry guarded the villages till the enemy left the pass.

b If we had remained in the plain the whole day the barbarians could not have wounded us.

c The generals blamed Cyrus because he did not ascend the mountains.

7 Give the reason for the case of φιλοσόφῳ (*b*, 1), δυνάμεως (*b*, 3), πολλοῦ (*b*, 4), τι (*b*, 5), αὐτῷ (*b*, 6), ὁπόσον (*c*, 2), σταδίων (*c*, 4); for the mode of γένοιντο (*b*, 4), θέλοι (*b*, 5), προδιώξειαν (*c*, 2).

8 From what verb is each of the following and where is the form found: λελοιπὼς εἴη (*a*, 3), ᾔσθετο (*a*, 3), ἴσθι (*b*, 1), συγκαταστρέψαιντ' (*b*, 6), ᾐτιῶντο (*c*, 6)?

9 Give the syntax of κωλύοντος (*a*, 6), ὧν (*b*, 2), περιγενέσθαι (*b*, 2), χρῆσθαι (*b*, 5), ἐπαναχωρεῖν (*c*, 3). Classify the following participles: φεύγοντες (*c*, 1), τοξεύοντες (*c*, 2). Decline οὐδενὸς (*a*, 6) in the singular in all genders.

10 Conjugate, giving both the contracted and the uncontracted forms, ᾐτιῶντο (*c*, 6) in the voice, mode and tense here found. Write the first form of each mode including participle of θέλοι (*b*, 5) in the voice and tense here found. Compare πρεσβύτατοι (*c*, 5).

11 Write the principal parts of φυλάττων (*a*, 1), ἀνέβη (*a*, 6), λέγεις (*b*, 1), φεύγοντες (*c*, 1), ἠδύνατο (*c*, 7).

12 Explain the force of οὖν (*a*, 6), μέντοι (*b*, 2), καὶ (*c*, 1). Distinguish in meaning between the accusative of time and the dative of time, illustrating from (*a*).

13 Give the force of the tense of ἐτίτρωσκον (*c*, 1); the uncontracted form and the reason for the accent of τοὔπισθεν (*c*, 1); the correlative of ὁπόσον (*c*, 2); the difference in meaning between ὁ αὐτὸς ἀνήρ and ὁ ἀνὴρ αὐτός. Account for the use of ἂν (*b*, 2).

14 Give the composition of each of the following words and the meaning of each part: φιλοσόφῳ (*b*, 1), ἀνόητος (*b*, 2), περιγενέσθαι (*b*, 2). Give, with meaning, an English word derived from ἄγγελος, δύναμαι, ἄθεος, φάλαγξ.

15 Translate into English [This must be taken by those who desire credit for the fourth book]:

THE GREEKS MAKE AN ATTACK

Ἐνταῦθα ἔδοξε κράτιστον εἶναι τοὺς ἑπομένους πολεμίους φοβῆσαι, εἴ τις δύναιτο, μὴ ἐπιπέσοιεν τοῖς κάμνουσι. Καὶ ἦν μὲν σκότος ἤδη, οἱ δὲ προσῄεσαν πολλῷ θορύβῳ, ἀμφὶ ὧν εἶχον διαφερόμενοι. Ἔνθα δὴ οἱ μὲν ὀπισθοφύλακες, ἅτε ὑγιαίνοντες, ἐξαναστάντες ἔδραμον εἰς τοὺς πολεμίους· οἱ δὲ κάμνοντες, ἀνακραγόντες ὅσον ἠδύναντο μέγιστον, τὰς ἀσπίδας πρὸς τὰ δόρατα ἔκρουσαν. Οἱ δὲ πολέμιοι δείσαντες ἧκαν ἑαυτοὺς κατὰ τῆς χιόνος εἰς τὴν νάπην, καὶ οὐδεὶς ἔτι οὐδαμοῦ ἐφθέγξατο. — 4, 5

High School Department

157TH EXAMINATION

HOMER'S ILIAD

Thursday, January 26, 1899 — 1.15 to 4.15 p. m., only

Answer the first six questions and four of the others but **no more.** *If more than four of the others are answered only the first four answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1–5 Translate into English:

a SPEECH OF ACHILLES

1 "Ἀτρεΐδη, νῦν ἄμμε παλιμπλαγχθέντας ὀίω
2 ἂψ ἀπονοστήσειν, εἴ κεν θάνατόν γε φύγοιμεν,
3 εἰ δὴ ὁμοῦ πόλεμός τε δαμᾷ καὶ λοιμὸς Ἀχαιούς.
4 ἀλλ' ἄγε δή τινα μάντιν ἐρείομεν ἢ ἱερῆα
5 ἢ καὶ ὀνειροπόλον — καὶ γάρ τ' ὄναρ ἐκ Διός ἐστιν —
6 ὅς κ' εἴποι ὅ τι τόσσον ἐχώσατο Φοῖβος Ἀπόλλων,
7 εἴτ' ἄρ' ὅ γ' εὐχωλῆς ἐπιμέμφεται εἴθ' ἑκατόμβης,
8 αἴ κέν πως ἀρνῶν κνίσης αἰγῶν τε τελείων
9 βούλεται ἀντιάσας ἡμῖν ἀπὸ λοιγὸν ἀμῦναι."—1 59–67

b DREAM OF AGAMEMNON

1 "εὕδεις, Ἀτρέος υἱὲ δαΐφρονος ἱπποδάμοιο;
2 οὐ χρὴ παννύχιον εὕδειν βουληφόρον ἄνδρα,
3 ᾧ λαοί τ' ἐπιτετράφαται καὶ τόσσα μέμηλεν.
4 νῦν δ' ἐμέθεν ξύνες ὦκα· Διὸς δέ τοι ἄγγελός εἰμι,
5 ὃς σεῦ ἄνευθεν ἐὼν μέγα κήδεται ἠδ' ἐλεαίρει.
6 θωρῆξαί σε κέλευσε καρηκομόωντας Ἀχαιούς
7 πανσυδίῃ· νῦν γάρ κεν ἕλοις πόλιν εὐρυάγυιαν
8 Τρώων· οὐ γὰρ ἔτ' ἀμφὶς Ὀλύμπια δώματ' ἔχοντες
9 ἀθάνατοι φράζονται."— 2, 60–68

c DESCRIPTION OF ODYSSEUS

1 δεύτερον αὖτ' Ὀδυσῆα ἰδὼν ἐρέειν' ὁ γεραιός
2 "εἴπ' ἄγε μοι καὶ τόνδε, φίλον τέκος, ὅς τις ὅδ' ἐστίν·
3 μείων μὲν κεφαλῇ Ἀγαμέμνονος Ἀτρεΐδαο,
4 εὐρύτερος δ' ὤμοισιν ἰδὲ στέρνοισιν ἰδέσθαι.
5 τεύχεα μέν οἱ κεῖται ἐπὶ χθονὶ πουλυβοτείρῃ,
6 αὐτὸς δὲ κτίλος ὣς ἐπιπωλεῖται στίχας ἀνδρῶν.
7 ἀρνειῷ μιν ἔγωγε ἐίσκω πηγεσιμάλλῳ,
8 ὅς τ' οἰῶν μέγα πῶυ διέρχεται ἀργεννάων."— 3, 191–198

6 Translate into Greek:

a Achilles said that he would escape death and after he had conquered Hector would lead the men against the ranks of the Trojans.

b I shall command those that wish to remain apart from battle to be valiant and to fight with the enemy.

7 Give the Attic prose form for **ἄμμε** (*a*, 1), **ἱερῆα** (*a*, 4), **αἴ** (*a*, 8), **ἱπποδάμοιο** (*b*, 1), **τόσσα** (*b*, 3), **ἐμέθεν** (*b*, 4), **σεῦ** (*b*, 5), **ὤμοισιν** (*c*, 4), **ἰδὲ** (*c*, 4), **ἀργεννάων** (*c*, 8).

8 Explain why the dream described in (*b*) was sent to Agamemnon. Give the circumstances under which (*c*) was uttered.

9 Give the reason for the case of **εὐχωλῆς** (*a*, 7), **κνίσης** (*a*, 8), **ἐμέθεν** (*b*, 4), **τοι** (*b*, 4), **κεφαλῇ** (*c*, 3), **οἱ** (*c*, 5). Write the principal parts of **φύγοιμεν** (*a*, 2), **ἐπιτέτραφαται** (*b*, 3).

10 From what verb is each of the following and where is the form found: **δαμᾷ** (*a*, 3), **μέμηλεν** (*b*, 3), **ξύνες** (*b*, 4)? Give the reason for the mode of **φύγοιμεν** (*a*, 2), **ἐρείομεν** (*a*, 4), **βούλεται** (*a*, 9). Compare **μείων** (*c*, 3).

11 Classify the following participles: **ἀντιάσας** (*a*, 9), **ἐὼν** (*b*, 5), **ἔχοντες** (*b*, 8), **ἰδὼν** (*c*, 1). Explain the construction of **ἀπονοστήσειν** (*a*, 2), **εὗδειν** (*b*, 2), **ἰδέσθαι** (*c*, 4). Conjugate **κεῖται** (*c*, 5) in the voice, mode and tense here found.

12 Explain the force of **γε** (*a*, 2), **γάρ** (*a*, 5), the second **δέ** in (*b*, 4), **καὶ** (*c*, 2). Mention and define the figure of speech found in (*c*).

13 Give the composition of *each* of the following words and the meaning of each part: **ἱπποδάμοιο** (*b*, 1), **βουληφόρον** (*b*, 2), **ἀθάνατοι** (*b*, 9), **πηγεσιμάλλῳ** (*c*, 7). Show how the meaning of **ξύνες** (*b*, 4) is derived.

14 Scan the first *three* lines of (*a*), marking quantity of syllables, division into feet and principal cesuras. Define and illustrate *dieresis*, *litotes*.

15 Explain the construction of *each* of the underscored words in the following and rewrite the sentences in Attic Greek:

a **ὁ δέ κεν κεχολώσεται ὅν κεν ἵκωμαι.**

b **τῶν οὐκ ἄν τι φέροις ἀνελὼν ἀέκοντος ἐμεῖο.**

High School Department

159TH EXAMINATION

HOMER'S ILIAD

Thursday, June 15, 1899—1.15 to 4.15 p. m., only

Answer the first six questions and four of the others but **no more.** *If more than four of the others are answered only the first four answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1–5 Translate into English:

a SPEECH OF THE SEER

1 καὶ τότε δὴ θάρσησε καὶ ηὔδα μάντις ἀμύμων
2 "οὔτ ἄρ' ὅ γ' εὐχωλῆς ἐπιμέμφεται οὔθ' ἑκατόμβης,
3 ἀλλ' ἕνεκ' ἀρητῆρος, ὃν ἠτίμησ' Ἀγαμέμνων,
4 οὐδ' ἀπέλυσε θύγατρα καὶ οὐκ ἀπεδέξατ' ἄποινα,
5 τοὔνεκ' ἄρ' ἄλγε' ἔδωκεν ἑκηβόλος ἠδ' ἔτι δώσει.
6 οὐδ' ὅ γε πρὶν Δαναοῖσιν ἀεικέα λοιγὸν ἀπώσει,
7 πρίν γ' ἀπὸ πατρὶ φίλῳ δόμεναι ἑλικώπιδα κούρην
8 ἀπριάτην ἀνάποινον, ἄγειν θ' ἱερὴν ἑκατόμβην
9 ἐς Χρύσην. τότε κέν μιν ἱλασσάμενοι πεπίθοιμεν."—1, 92–100

b SPEECH OF NESTOR

1 τοῖσι δὲ καὶ μετέειπε Γερήνιος ἱππότα Νέστωρ
2 "ὦ πόποι, ἦ δὴ παισὶν ἐοικότες ἀγοράασθε
3 νηπιάχοις, οἷς οὔ τι μέλει πολεμήια ἔργα.
4 πῇ δὴ συνθεσίαι τε καὶ ὅρκια βήσεται ἡμῖν;
5 ἐν πυρὶ δὴ βουλαί τε γενοίατο μήδεά τ' ἀνδρῶν
6 σπονδαί τ' ἄκρητοι καὶ δεξιαί, ᾗς ἐπέπιθμεν.
7 αὔτως γάρ ῥ' ἐπέεσσ' ἐριδαίνομεν, οὐδέ τι μῆχος
8 εὑρέμεναι δυνάμεσθα, πολὺν χρόνον ἐνθάδ' ἐόντες."—2, 336–343

c MENELAUS ACCEPTS THE CHALLENGE

1 τὸν δ' ὡς οὖν ἐνόησεν ἀρηίφιλος Μενέλαος
2 ἐρχόμενον προπάροιθεν ὁμίλου μακρὰ βιβῶντα,
3 ὥς τε λέων ἐχάρη μεγάλῳ ἐπὶ σώματι κύρσας,
4 εὑρὼν ἢ ἔλαφον κεραὸν ἢ ἄγριον αἶγα
5 πεινάων. μάλα γάρ τε κατεσθίει, εἴ περ ἂν αὐτόν
6 σεύωνται ταχέες τε κύνες θαλεροί τ' αἰζηοί·
7 ὣς ἐχάρη Μενέλαος Ἀλέξανδρον θεοειδέα
8 ὀφθαλμοῖσιν ἰδών· φάτο γὰρ τίσεσθαι ἀλείτην.—3, 21–28

7 Give the reason for the case of ἐκείνου (*b*, 2), ὑμῖν (*b*, 2), χειρὸς (*b*, 4), ἀγορᾶς (*c*, 2), ἡμέρας (*c*, 3), βουλομένοις (*c*, 4); for the mode of φθίῃς (*a*, 6), πέμπῃ (*b*, 1), δύνωμαι (*b*, 4), γένοιο (*b*, 5).

8 Translate into Greek:

The soldiers whom Agesilaus had sent to follow the enemy announced that most of the enemy had crossed the river and were waiting till the general should arrive.

9 Translate into English:

Ἐπεὶ ταῦτα εἶπεν ὁ Ἀστυάγης, ἡ μήτηρ διηρώτα καὶ Κῦρον πότερον βούλοιτο μένειν ἢ ἀπιέναι. Ὁ δὲ οὐκ ἠμέλλησεν, ἀλλὰ ταχὺ εἶπεν ὅτι μένειν βούλοιτο. Ἐπερωτηθεὶς δὲ πάλιν ὑπὸ τῆς μητρὸς διὰ τί, εἰπεῖν λέγεται, Ὅτι οἴκοι μὲν τῶν ἡλίκων καὶ εἰμὶ καὶ δοκῶ κράτιστος εἶναι, ὦ μῆτερ, καὶ ἀκοντίζων καὶ τοξεύων, ἐνταῦθα δὲ οἶδ' ὅτι ἱππεύων ἥττων εἰμὶ τῶν ἡλίκων.

—Xenophon, Cyropaedia, 1, 3

μέλλω = hesitate, ἧλιξ = comrade

10 Translate into English:

Ὡς δὲ οὐκ ἐδύναντο ἀποτρέχειν, πέμπουσι πρὸς Ξενοφῶντα, ὃς ἡγεῖτο τοῖς ὁπλίταις. Ὁ δὲ ἐλθὼν λέγει ὅτι ἔστι χωρίον χρημάτων πολλῶν μεστόν· τοῦτο οὔτε λαβεῖν δυνάμεθα· ἰσχυρὸν γάρ ἐστιν· οὔτε ἀπελθεῖν ῥᾴδιον· μάχονται γὰρ ἐπεξεληλυθότες καὶ ἡ ἄφοδος χαλεπή.—Anabasis, 5, 2

11 Translate into Greek: (*a*) He promises to give us boats if we will make the journey, (*b*) The general happened to be in the city when the soldiers plundered the land, (*c*) We feared that the enemy would pursue us on the following day.

12 Translate into English:

ὣς ἔφατ' εὐχόμενος· τὸν δ' οὐ βέλος ὠκὺ δάμασσεν,
ἀλλ' ἀναχωρήσας πρόσθ' ἵππουιν καὶ ὄχεσφιν
ἔστη, καὶ Σθένελον προσέφη Καπανήιον υἱόν
"ὄρσο, πέπον Καπανηιάδη, καταβήσεο δίφρου,
ὄφρα μοι ἐξ ὤμοιο ἐρύσσῃς πικρὸν ὀιστόν."—Homer, Iliad, 5, 106–110

13 Translate into English:

Μετὰ δὲ ταῦτα ἀναστὰς εἶπε Ξενοφῶν· Ὦ ἄνδρες στρατιῶται, τὴν μὲν πορείαν, ὡς ἔοικε, πεζῇ ποιητέον· οὐ γὰρ ἔστι πλοῖα· ἀνάγκη δὲ πορεύεσθαι ἤδη· οὐ γὰρ ἔστι μένουσι τὰ ἐπιτήδεια. Ἡμεῖς οὖν, ἔφη, θυσόμεθα· ὑμᾶς δὲ δεῖ παρασκευάζεσθαι ὡς μαχουμένους, εἴ ποτε καὶ ἄλλοτε.—Anabasis, 6, 4

14 Write Greek sentences illustrating *three* of the following: clause of result, degree of difference, accusative absolute, predicate genitive, dative of means.

15 Give a sketch of *two* of the following: Hector, Cyrus, Socrates, Athena.

9 Decline *tu*, *tres*, *nullus* throughout.

10 Translate into Latin:

a Romulus was king for many years.
b They said that the soldiers had taken the city.
c He said that Hannibal was very brave.
d Let us have peace.
e At that time Caesar was conquering the Gauls.
Gaul = *Gallus*

11 Write in Latin: with the leader, the first war, to have loved, to be advised, let him hear, he had been advised, he will be ruled, about to hear, hearing, hear ye.

12 Translate into English:

Apud Romanos Iuppiter fuit deorum et hominum pater. Iuno, uxor Iovis, regina fuit caeli. Minerva, filia Iovis, dea fuit sapientiae. Apollinem appellaverunt deum solis, Dianam deam lunae, Cererem deam frumenti. Mercurius deorum nuntius fuisse *dicitur*. In Graecia et in Italia dicunt multa templa fuisse Iovis.

13 Give the principal parts of *educit*, *facit*, *vident*, *collocat* (question 6), *dicitur* (question 12).

14 Write the third person plural of *all* the tenses of the indicative and subjunctive, active and passive, of *fero*.

15 Give the rule for *each* of the following: (*a*) direct object of verb, (*b*) subject of infinitive, (*c*) adjective agreement, (*d*) separation, (*e*) duration of time.

9 Translate into English:

Postero die castra ex eo loco movent. Idem facit Caesar. Equitatum omnem praemittit, qui videant, quas in partes hostes iter faciant. Ii alieno loco cum equitatu Helvetiorum proelium committunt, et pauci de nostris cadunt.

praemitto = send forward, *pars* = direction, *alienus* = unfavorable

10 Compare *parvus*, *magnus*, *fortis*, *pulcher*, *difficilis*.

11 Write in Latin [Do not use figures]: 5, 8, 22, 3d, 9th, 10th. Define and illustrate *two* of the following: *antepenult*, *deponent verb*, *gerund*, *enclitic*.

12 Give *all* the infinitives, active and passive, of *audio*; the present imperative, active and passive, of *amo*. [Translate each form.]

13 Translate into Latin:

- *a* Caesar had many soldiers in camp.
- *b* He was the noblest man among the Romans.
- *c* The leader of the enemy says he will praise those brave horsemen.
- *d* Let us lead the army from Gaul to Rome.
- *e* Forces were sent to seize the city.

14 Decline throughout *quid bellum*, *ille altior mons*.

15 Decline *idem* in the singular in all genders; *ipse* in the plural in all genders; *prudens* throughout.

High School Department

158TH EXAMINATION

LATIN—First Year

Tuesday, March 28, 1899—9.15 a. m. to 12.15 p. m., only

Answer either question 7 or question 13 and nine of the others but **no more.** *If more than nine of the others are answered only the first nine answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Mark the division into syllables and the accent of *each* of the following words: *magister*, *temporis*, *marique*, *terrarum*, *instruit*, *principibus*, *aberat*, *respondebat*, *dixit*, *alios.*

2 To what gender belong names of (*a*) rivers, (*b*) islands, (*c*) months? Give the gender of *each* of the following nouns: *nauta*, *proelium*, *virtus*, *tempus*, *passus*, *multitudo*, *clamor.*

3 Decline in the singular *vis*, *spes*, *mulier*, *domus*, *collis.*

4 Form an adverb from *each* of the following adjectives: *brevis*, *clarus*, *diligens*, *liber*, *multus*, *par.* Compare *prudens*, *antiquus.*

5 Translate into English:

Labienus, ut erat *ei* praescriptum a Caesare, *proelio* abstinebat. Per exploratores Caesar *cognovit montem* a suis teneri et Helvetios castra movisse. Eo die *hostes* sequitur et *milia passuum* tria ab eorum castris castra *ponit.*

praescribo = direct, *abstineo* = refrain

6 Give the reason for the case of each of *three* of the following: *ei*, *proelio*, *montem*, *hostes*, *milia*, *passuum.* Give the principal parts of *cognovit*, *ponit.*

7 Translate into Latin:

a The soldiers must move the camp.
b Caesar was holding the town with all his forces.
c For three days he had followed the cavalry of the enemy.
d Labienus will be on the mountain.
e This scout tells Caesar that the Gauls are coming.

8 Give the second person singular of *each* of the tenses of the indicative and subjunctive active of *duco.*

9 Decline *tota Gallia* in the singular; *id genus* in the plural; *gravis* throughout.

10 Conjugate *sum* throughout the imperative. Give *all* the infinitives and participles of *teneo*.

11 Translate into English:

Tubicen ab hostibus captus est, et quaesivit: 'Cur me interficitis? nam inermis sum neque *quidquam habeo* praeter hanc tubam.' Hostes autem *responderunt:* 'Propter hoc te interficiemus, quod alios ad pugnam incitare soles.'

tubicen=trumpeter, *quaero*=ask, *inermis*=unarmed, *praeter* = except, *tuba*= trumpet, *propter* = on account of

12 Conjugate *habeo*, *responderunt* (question 11) in the voice, mode and tense here found; *possum* in the pluperfect subjunctive; *nolo* in the perfect subjunctive.

13 Translate into Latin:

a Have you a large javelin?
b We fought to free our country.
c Many chiefs were killed in this fight.
d He was leading the multitude to the sea.
e Let us fortify this town with a high wall,

14 Decline *quidquam* (question 11) in the masculine and neuter singular; *alius* in the feminine and neuter singular; *fortior* throughout.

15 Give the rule for *each* of the following: (*a*) apposition, (*b*) comparison without *quam*, (*c*) place from which, (*d*) person addressed, (*e*) object of verb *utor*.

High School Department

159TH EXAMINATION

LATIN—First Year

Friday, June 16, 1899—9.15 a. m. to 12.15 p. m., only

Answer either question 5 or question 9 and nine of the others but **no more.** *If more than nine of the others are answered only the first nine answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Write the accusative plural of *each* of the following nouns, indicating the gender and the proper accent of each form: *aestas*, *mater*, *frumentum*, *regina*, *victor*, *animal*, *impetus.*

2 Decline *puer*, *flumen*, *templum*, in the singular; *nulla obses* in the plural.

3 Translate into English:

Hannibal *imperator factus est* et omnes gentes *Hispaniae* bello subegit. *Tres* exercitus *maximos* comparavit. Ex his *unum* in Africam misit, alterum cum fratre in Hispania *reliquit*, tertium in Italiam secum duxit.

gens = nation, *Hispania* = Spain, *subigo* = subdue, *comparo* = fit out

4 Give the reason for the case of *imperator*, *Hispaniae*, *unum.* Compare *maximos.* Decline *tres.*

5 Translate into Latin:

a The leader was loved by his soldiers.
b Let us take these gifts.
c That boy is braver than his father.
d Who will lead the soldiers across the river?
e Caesar says that he will not give grain to the enemy.

6 Conjugate *volo* (wish) in the future and pluperfect indicative; *possum* in the present and imperfect subjunctive.

7 Write the third person singular of *each* of the tenses of the indicative and subjunctive passive of *munio.*

8 Translate into English:

Tum Caesar in dextro et sinistro cornu equites collocat, et militum animos paucis *verbis* ad pugnam *incitat.* "Milites, omnis spes civitatis Romanae in virtute nostra *est;* fortibus victoria est."

dexter = right, *sinister*=left, *colloco* = station, *verbum* = word

9 Translate into Latin:

a The temples are very beautiful.

b Hannibal ordered his army to take the camp

c He has lived at Rome for seven years.

d He said that he had sent a letter to Rome.

e I have the book that you gave me.

10 Give the principal parts of *factus est*, *reliquit* (question 3), *incitat*, *est* (question 8). Give the reason for the case of *verbis* (question 8).

11 Decline *iste* in the singular in all genders; *potens eques* in the plural.

12 Give *all* the infinitives and participles of *dico* (say). [Translate each form.]

13 Give the Latin for (*a*) He was conquering, (*b*) They have been conquered, (*c*) He will go, (*d*) We prefer, (*e*) You have heard, (*f*) He will have been conquered, (*g*) He had gone, (*h*) at home, (*i*) from the city, (*j*) on the third day.

14 Translate into English:

Pyrrhus in Italiam venit et Laevinus consul contra eum missus est. Pugna commissa, Pyrrhus auxilio elephantorum vicit. Nox proelio finem dedit. Laevinus tamen per noctem fugit. Pyrrhus Romanos mille octingentos cepit eosque summo honore tractavit.

elephantus = elephant, *octingenti* = 800, *tracto* = treat

15 From the Latin passage in question 14, select (*a*) a noun in apposition, (*b*) a pronoun used with a preposition, (*c*) an ablative absolute, (*d*) an indirect object, (*e*) a direct object.

High School Department

157TH EXAMINATION

CAESAR'S COMMENTARIES

Thursday, January 26, 1899—1.15 to 4.15 p. m., only

Answer the first six questions and four of the others but **no more.** *If more than four of the others are answered only the first four answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1–5 Translate into English:

a THE GERMANS MAKE A TREACHEROUS ATTACK

Dum haec in colloquio *geruntur*, Caesari nuntiatum est *equites* Ariovisti *propius tumulum* accedere et ad nostros adequitare, lapides telaque in nostros conjicere. Caesar *loquendi finem* facit, seque ad suos *recepit suis*que imperavit ne quod omnino telum in hostes *rejicerent*. Nam etsi sine ullo periculo legionis delectae cum equitatu proelium fore videbat, tamen committendum non putabat ut pulsis *hostibus dici posset* eos ab se per fidem in colloquio circumventos.—1, 46

b THE SIX HOURS' BATTLE

Quum jam *amplius horis* sex continenter *pugnaretur*, ac non solum *vires* sed etiam *tela* nostris deficerent, atque hostes *acrius* instarent languidioribusque nostris vallum scindere et fossas complere coepissent, resque esset jam ad *extremum* perducta casum, P. Sextius Baculus, *primi* pili centurio, quem Nervico proelio compluribus confectum vulneribus *diximus*, et item C. Volusenus, *tribunus* militum, vir et *consilii* magni et virtutis, ad Galbam accurrunt atque unam esse *spem* salutis *docent*, si eruptione facta extremum auxilium experirentur.—3, 5

c INFORMATION REGARDING THE SUEVI

Caesar paucos dies in eorum finibus moratus, omnibus vicis aedificiisque incensis frumentisque succisis, se in fines Ubiorum recepit, atque *iis auxilium* suum pollicitus, si ab Suevis *premerentur*, haec ab iis cognovit: *Suevos*, posteaquam per exploratores pontem *fieri* comperissent, *more* suo concilio habito nuntios in omnes partes dimisisse, uti de oppidis demigrarent, liberos, uxores suaque omnia in silvis *deponerent*, atque omnes qui arma ferre *possent* unum in locum *convenirent:* hunc esse delectum medium fere regionum earum quas Suevi obtinerent.
—4, 19

6 Translate into Latin [Do not use rare or poetic constructions]:

a Having stationed soldiers around the camp, the leader routed the enemy.

b The citizens made a conspiracy in order to have the liberty they desired.

c The lieutenants thought that they must follow the army.

7 Translate into Latin [Do not use rare or poetic constructions]:

a Caesar's cavalry advanced so swiftly that many Gauls were killed.

b The line of battle could not be seen by those who were in the town.

c For four days they bravely withstood all attacks.

8 Give the reason for the case of *nobilitate*, *oppido*, *legati*, *iisdem*, *subsidio*, *oppidanis* (*a*), *civitatum* (*b*), *diebus*, *celeritate*, *spatio* (*c*).

9 Give the reason for the mode of *fecisset*, *venerant* (*a*), *arbitrarentur*, *intelligeret*, *studere*, *conspirarent* (*b*), *videbat*, *essent pulsi*, *effugerent*, *ferre* (*c*).

10 Give the principal parts of *ostendimus*, *datis*, *licere* (*b*), *nactus*, *efficere* (*c*).

11 Give an account of *one* of the following: (*a*) Caesar's first expedition into Britain, (*b*) the career of Dumnorix, (*c*) the story of Orgetorix.

12 Write in direct discourse *Nisi . . . posse* (*a*). Change *belli gerendi* (*b*) to the gerund construction.

13 Compare *diutius* (*a*), *novis*, *mobiliter*, *plures*, *latius* (*b*).

14 Mention an indeclinable noun and an indeclinable adjective. Give the gender of *finem* (*a*), *acie* (*c*). Decline throughout *rebellio*, *obsidibus* (*b*), *cursu* (*c*).

15 Give the derivation of each of *two* of the following words, stating in each case the meaning of root, of prefix and of termination: *subsidium* (*a*), *difficultates*, *injuriae*, *conjuratio* (*b*). Give an English word derived from the stem of *each* of the following: *gratia*, *submittatur* (*a*), *retentorum*, *odisse* (*b*).

High School Department

159TH EXAMINATION

CAESAR'S COMMENTARIES

Thursday, June 15, 1899—1.15 to 4.15 p. m., only

Answer the first six questions and four of the others but **no more.** *If more than four of the others are answered only the first four answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1–5 Translate into English:

a CAESAR HEARS THAT ARIOVISTUS IS HASTENING TO VESONTIO

Cum tridui *viam processisset,* nuntiatum est *ei* Ariovistum cum suis omnibus copiis ad occupandum Vesontionem, quod est oppidum maximum Sequanorum, *contendere* triduique viam a suis finibus profecisse. Id ne *accideret* magno opere *sibi praecavendum* Caesar existimabat. Namque omnium *rerum* quae ad bellum *usui* erant summa erat in eo oppido facultas, idque natura loci sic muniebatur ut magnam ad ducendum bellum *daret* facultatem, propterea quod flumen Dubis, ut *circino circumductum,* paene totum oppidum *cingit.*—1, 38

b CAESAR OFFERS TERMS OF SURRENDER

Ad haec Caesar respondit: Se magis *consuetudine* sua quam merito eorum civitatem conservaturum, si prius quam murum aries attigisset se *dedidissent;* sed deditionis nullam esse *conditionem* nisi *armis* traditis. Se id quod in Nerviis *fecisset facturum* finitimisque imperaturum, ne quam dedititiis populi Romani injuriam *inferrent. Re* nuntiata ad suos, quae imperarentur *facere dixerunt.*—2, 32

c THE FLEET ARRIVES AT BRITAIN

Ipse *hora* circiter diei quarta cum primis *navibus* Britanniam attigit, atque ibi in omnibus *collibus expositas hostium* copias armatas *conspexit.* Cujus *loci* haec erat natura atque ita montibus *angustis mare continebatur* uti ex locis *superioribus* in *litus* telum adigi posset. Hunc ad egrediendum nequaquam idoneum locum *arbitratus,* dum reliquae naves eo *convenirent,* ad horam nonam in ancoris expectavit. Interim *legatis* tribunisque militum *convocatis,* et quae ex Voluseno cognosset et quae fieri *vellet* ostendit.—4, 23

6 Translate into Latin [Do not use rare or poetic constructions]:

(*a*) The Aduatuci said that they were unwilling to surrender their arms, (*b*) During the day many places will be captured by the enemy, (*c*) This town is so fortified by walls that the enemy can not take it, (*d*) After occupying the city Caesar inflicted no injury on the enemy's soldiers.

7 Translate into Latin [Do not use rare or poetic constructions]:

(*a*) Caesar thought that this ought to be done at the fifth hour, (*b*) They saw that the hill was surrounded by armed men, (*c*) Caesar sent me to announce this to you, (*d*) When this had been done the states surrendered to him, (*e*) The war that was waged was useful to our country.

8 Give the syntax of *viam* (*a*, line 1), *ei*, *sibi*, *rerum*, *circino* (*a*), *consuetudine*, *conditionem*, *armis* (*b*), *hora*, *expositas* (*c*).

9 Give the principal parts of *contendere* (*a*), *inferrent* (*b*), *conspexit*, *continebatur*, *arbitratus* (*c*).

10 Write in direct discourse *Se* . . . *traditis* (*b*).

11 Conjugate *facere* (*b*) in the future indicative active, in the imperfect subjunctive active; *vellet* (*c*) in the present indicative. Give the active imperative forms of *inferrent* (*b*); *all* the participles of *dixerunt* (*b*).

12 Write on *one* of the following: (*a*) Caesar as a general, (*b*) weapons of the legionary soldier, (*c*) siege operations as conducted by Caesar.

13 Give the reason for the mode of *processisset*, *accideret*, *daret*, *cingit* (*a*), *dedidissent*, *fecisset*, *facturum*, *inferrent* (*b*), *convenirent*, *vellet* (*c*).

14 Decline *re* (*b*), *litus* (*c*) throughout; *usui* (*a*), *collibus* (*c*) in the singular. Compare *angustis*, *superioribus* (*c*).

15 Give the composition of *praecavendum*, *circumductum* (*a*). Write an English word derived from the stem of each of *six* of the following: *navibus*, *hostium*, *loci*, *mare*, *arbitratus*, *convenirent*, *legatis*, *convocatis* (*c*).

High School Department

159TH EXAMINATION

SALLUST'S CATILINE

Monday, June 12, 1899—1.15 to 4.15 p. m., only

Answer the first six questions and four of the others but **no more.** *If more than four of the others are answered only the first four answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1–5 Translate into English:

a IMPORTANCE OF MORAL STRENGTH

Si regum atque imperatorum animi virtus in pace ita ut in bello *valeret*, aequabilius atque *constantius* sese res humanae haberent, neque aliud alio *ferri* neque mutari ac *misceri* omnia *cerneres*. Nam imperium *facile* his artibus retinetur, quibus *initio partum est*. Verum ubi pro labore desidia, pro continentia et aequitate lubido atque superbia invasere, fortuna simul cum *moribus* immutatur. Ita imperium semper ad optumum quemque a *minus* bono transfertur.— 2

b CATILINE LEAVES ROME

Dein se ex curia *domum* proripuit. Ibi multa secum ipse volvens, quod neque insidiae *consuli procedebant*, et ab incendio intellegebat *urbem vigiliis* munitam, optumum *factu credens* exercitum *augere*, ac prius quam legiones *scriberentur* multa antecapere quae bello *usui forent*, nocte intempesta cum paucis in Manliana *castra* profectus est. Sed *Cethego* atque Lentulo ceterisque, quorum cognoverat promptam *audaciam*, mandat quibus rebus possent opes factionis *confirment*.— 32

c ROME'S TREATMENT OF AN ENEMY

Bello Macedonico, quod cum rege Perse gessimus, Rhodiorum civitas, magna atque *magnifica*, quae populi Romani *opibus creverat*, infida atque advorsa *nobis* fuit; sed postquam *bello* confecto de Rhodiis *consultum est*, majores nostri, ne quis *divitiarum* magis quam injuriae caussa bellum *inceptum diceret*, impunitos eos dimisere. Item bellis *Punicis* omnibus, cum *saepe* Carthaginienses et in pace et per inducias multa nefaria *facinora fecissent*, *numquam* ipsi per occasionem talia fecere; magis quid *se dignum foret*, quam quid in illos *jure* fieri *posset*, *quaerebant*.— 51

High School Department

159TH EXAMINATION

CICERO'S ORATIONS

Friday, June 16, 1899—1.15 to 4.15 p. m., only

Answer the first six questions and four of the others but **no more.** *If more than four of the others are answered only the first four answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1–5 Translate into English:

a CICERO DEFENDS HIS ACTION

Ac si quis *est* talis, quales *omnes* esse oportebat, qui in hoc ipso, in quo exsultat et triumphat oratio mea, me *vehementer accuset*, quod tam capitalem hostem non *comprehenderim* potius quam *emiserim*, non est ista mea culpa, sed *temporum*. *Interfectum esse* L. Catilinam et gravissimo *supplicio* adfectum iam pridem oportebat, idque a me et mos *maiorum* et huius imperii severitas et res publica postulabat. Sed quam multos fuisse putatis qui quae ego *deferrem* non *crederent?* quam multos qui etiam defenderent?—In Catilinam, 2, 2

b CHARACTER OF CATILINE

Ille erat unus timendus ex istis omnibus, sed tam *diu*, dum urbis moenibus *continebatur*. Omnia norat, *omnium aditus* tenebat: *appellare*, temptare, sollicitare *poterat*, audebat: erat *ei* consilium ad *facinus* aptum, *consilio* autem neque lingua neque *manus* deerat. Iam ad certas res conficiendas certos homines delectos ac descriptos habebat. Neque vero, cum aliquid mandarat, confectum putabat: nihil erat quod non ipse *obiret*, *occurreret*, vigilaret, laboraret. Frigus, sitim, famem *ferre* poterat.—In Catilinam, 3, 7

c THE CHOICE OF A COMMANDER

Utinam, Quirites, *virorum* fortium atque *innocentium* copiam tantam *haberetis*, ut haec *vobis* deliberatio *difficilis esset*, quemnam potissimum tantis *rebus* ac tanto bello praeficiendum *putaretis!* Nunc vero cum *sit* unus Cn. Pompeius, qui non modo eorum *hominum*, qui nunc sunt, gloriam, sed etiam antiquitatis memoriam *virtute* superarit, quae res est quae cuiusquam animum in hac causa dubium facere possit?—Pro lege Manilia, 10

6 Translate into Latin [Do not use rare or poetic constructions]:

a There are some who think that Catiline ought to be put to death for his evil deeds.

b If we had one man who surpassed all others, he would be chosen commander.

7 Translate into Latin [Do not use rare or poetic constructions]:

a On account of his bravery and the fame which he had won in war, Pompey was very influential in the senate.

b Catiline had assembled his followers in order to persuade them to attack his enemies.

8 Give the syntax of *omnes*, *temporum*, *supplicio* (*a*), *omnium*, *ei*, *consilio* (*b*), *vobis*, *rebus*, *hominum*, *virtute* (*c*)

9 Give the principal parts of *interfectum esse*, *crederent* (*a*). Give the third person singular of *all* the tenses of the indicative and subjunctive of *obiret* (*b*); the active participles of *ferre* (*b*).

10 Give the reason for the mode of *est* (*a*, line 1), *accuset*, *comprehenderim*, *interfectum esse*, *deferrem* (*a*), *appellare* (*b*), *haberetis*, *esset*, *putaretis*, *sit* (*c*).

11 Translate into English:

Videor enim mihi videre hanc urbem, lucem orbis terrarum atque arcem omnium gentium, subito uno incendio concidentem: cerno animo sepulta in patria miseros atque insepultos acervos civium: versatur mihi ante oculos aspectus Cethegi et furor in vestra caede bacchantis.

12 Write on *one* of the following topics: (*a*) Cicero as a political leader, (*b*) Cicero's oration in behalf of the poet Archias, (*c*) The Roman senate in Cicero's time.

13 Explain by derivation or composition the meaning of each of *five* of the following words: *emiserim*, *maiorum*, *deferrem* (*a*), *continebatur*, *aditus*, *poterat*, *occurreret* (*b*), *innocentium*, *difficilis*, *virtute* (*c*).

14 Decline *facinus* (*b*), *virorum* (*c*) throughout; *supplicio* (*a*), *manus* (*b*) in the singular. Compare *vehementer* (*a*), *diu* (*b*).

15 Write Latin sentences not found on this paper [Latin words on this paper may be used] illustrating (*a*) relative clause of purpose, (*b*) infinitive used as subject, (*c*) ablative of accompaniment, (*d*) measure of difference, (*e*) dative of agent.

High School Department

159TH EXAMINATION

OVID'S METAMORPHOSES

Wednesday, June 14, 1899—1.15 to 4.15 p. m., only

Answer the first six questions and four of the others but* no more. *If more than four of the others are answered only the first four answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.

1–5 Translate into English:

a THE END OF PHAETHON'S ADVENTURE

At *Phaëthon*, rutilos *flamma* populante capillos,
Volvitur in *praeceps*, longoque per aëra tractu
Fertur, ut interdum de caelo stella sereno,
Etsi non cecidit, potuit cecidisse videri.
Quem procul a patria *diverso* maximus *orbe*
Excipit *Eridanus*, fumantiaque *abluit ora.*
Naïdes Hesperiae trifida fumantia flamma
Corpora dant *tumulo*, signant quoque carmine saxum:
"Hic situs est Phaëthon *currus* auriga *paterni*
Quem si non tenuit magnis tamen excidit ausis."—2, 319–328

b THISBE FINDS PYRAMUS DYING

"Pyrame," clamavit, "quis te *mihi casus ademit?*
Pyrame, responde: tua te carissima Thisbe
Nominat: exaudi, vultusque *attolle* jacentes!"
  Ad nomen Thisbes oculos jam *morte* gravatos
Pyramus *erexit*, visaque recondidit illa.
Quae postquam vestemque suam cognovit, et *ense*
Vidit ebur vacuum, "Tua te manus," inquit, "amorque
Perdidit, infelix. Est et *mihi* fortis in unum
Hoc manus, est et amor; dabit hic in vulnera vires.
Persequar exstinctum, letique miserrima dicar
*Causa comes*que tui; quique a me morte *revelli*
Heu sola poteras, poteris nec morte revelli."—4, 142–153

c HYMEN MARRIES ORPHEUS TO EURYDICE

Inde per *immensum* croceo velatus *amictu*
Aethera *digreditur*, Ciconumque Hymenaeus ad oras
Tendit, et *Orphea nequiquam* voce vocatur.

Adfuit ille quidem; sed nec sollemnia verba
Nec laetos vultus nec felix attulit omen.
Fax quoque, quam tenuit, *lacrimoso stridula* fumo
Usque *fuit*, nullosque invenit motibus ignes.—10, 1–7

6 Translate into Latin [Do not use rare or poetic constructions]:

a Having heard the voice of Thisbe, Pyramus turned to look at her.

b When Thisbe saw the sword lying on the ground she knew that Pyramus had destroyed himself.

7 Translate into Latin [Do not use rare or poetic constructions]:

a He was called the greatest of the gods in respect to strength.

b The other gods said that Phaethon would not have fallen from heaven if he had listened to his father.

8 Give the syntax of *flamma*, *orbe*, *tumulo*, *currus* (*a*), *mihi* (*b*, line 1), *morte* (*b*, line 4), *ense* (*b*), *mihi* (*b*, line 8), *causa* (*b*), *amictu* (*c*).

9 Write explanatory (not grammatic) notes on the following: *Eridanus*, *naïdes Hesperiae*, *currus paterni* (*a*), *nequiquam*, *Fax . . . stridula . . . fuit* (*c*).

10 Give the story of Niobe; of Midas.

11 Write the first *three* lines of (*c*), marking quantity of syllables, division into feet and principal cesuras. Define *dieresis*, *ecthlipsis*.

12 Decline *Phaëthon*, *ora*, *naïdes* (*a*), *casus*, *ense* (*b*), *Orphea* (*c*).

13 Write the principal parts of *abluit* (*a*), *ademit*, *erexit*, *revelli* (*b*), *digreditur* (*c*).

14 Define *simile*, *metonymy*. Select an example of each from the above passages. Give the derivation or composition of *praeceps*, *diverso* (*a*), *attolle*, *comes* (*b*), *immensum*, *lacrimoso* (*c*).

15 Translate into English:

At pater infelix, nec jam pater, "Icare," dixit,
"Icare," dixit, "ubi es? qua te regione requiram?"
"Icare," dicebat; pennas adspexit in undis;
Devovitque suas artes, corpusque sepulcro
Condidit; et tellus a nomine dicta sepulti.—8, 231–235

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157TH EXAMINATION

VIRGIL'S AENEID

Tuesday, January 24, 1899 — 1.15 to 4.15 p. m., only

Answer the first six questions and four of the others but **no more.** *If more than four of the others are answered only the first four answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1–5 Translate into English:

a THE STORM

Haec ubi dicta, cavum conversa cuspide montem
Inpulit in latus: ac venti, velut *agmine facto,*
Qua data porta, ruunt et terras *turbine perflant.*
Incubuere *mari*, totumque a sedibus imis
Una Eurusque Notusque ruunt creberque procellis
Africus, et vastos *volvunt* ad litora fluctus.
Insequitur clamorque virum *stridor*que *rudentum.*
Eripiunt subito *nubes* caelumque diemque
Teucrorum ex *oculis; ponto* nox incubat atra.—1, 81–89

b MERCURY PREPARES TO OBEY JUPITER

Dixerat. Ille patris magni parere parabat
Inperio; et primum *pedibus* talaria nectit,
Aurea, quae *sublimem alis* sive *aequora* supra
Seu terram rapido pariter cum flamine *portant;*
Tum virgam capit; *hac* animas ille evocat *Orco*
Pallentis, alias sub *Tartara* tristia mittit,
Dat somnos *adimit*que, et *lumina morte* resignat.— 4, 238–244

c AENEAS ACCOSTS THE SHADE OF PALINURUS

Hunc ubi vix multa maestum cognovit in umbra,
Sic *prior adloquitur:* Quis te, Palinure, *deorum*
Eripuit nobis, medioque sub aequore *mersit?*
Dic age. Namque *mihi, fallax* haud ante repertus,
Hoc uno *responso* animum delusit *Apollo,*
Qui fore te ponto incolumem, *finis*que *canebat*
Venturum Ausonios. En haec promissa *fides* est?
Ille autem: Neque te *Phoebi* cortina fefellit,
Dux *Anchisiade*, nec me deus aequore mersit.— 6, 340–348

6 Translate into Latin [Do not use rare or poetic constructions]:

a It is said that during all that night the winds swept over the sea.

b If Mercury had not obeyed his father when that divine one spoke, neither his wand nor his sandals could have kept him safe.

7 Translate into Latin [Do not use rare or poetic constructions]:

a On the last fatal night the report came to Priam's palace that the enemy were rushing into the city and that Troy would fall.

b Summoning his companion he addressed him thus: 'Come, tell me what response was made by Apollo.'

8 Decline *Apollo*, *Anchisiade* (*c*). Give the name of the rhetorical figure in *agmine facto*, *eripiunt . . . nubes* (*a*). Define and illustrate *two* of the following: *hendiadys*, *tmesis*, *onomatopoeia*.

9 Give the syntax of *turbine*, *mari*, *rudentum* (*a*), *pedibus*, *sublimem*, *hac*, *Orco* (*b*), *deorum*, *mihi*, *finis* (*c*).

10 Give the principal parts of *volvunt* (*a*), *adimit* (*b*), *adloquitur*, *mersit*, *canebat* (*c*).

11 Write the last *five* lines of (*a*), indicating quantity of syllables, division into feet and principal cesuras.

12 Explain the reference in *Tartara* (*b*), *Phoebi* (*c*). Give an account of *three* of the following: Iulus, Creusa, Andromache, Priam.

13 Give the derivation or composition of *perflant*, *stridor* (*a*), *lumina* (*b*), *fallax*, *responso* (*c*). Give an English word containing the stem of *mari*, *volvunt* (*a*), *portant*, *morte* (*b*), *fides* (*c*).

14 Decline *turbine*, *nubes* (*a*) in the singular, *alis* (*b*), *prior* (*c*) in the plural. Distinguish the following synonyms: *mari*, *ponto* (*a*), *aequora* (*b*); *oculis* (*a*), *lumina* (*b*).

15 Translate into English:

Quod te per superos et conscia numina veri,
Per, si qua est, quae restet adhuc mortalibus usquam
Intemerata fides, oro, miserere laborum
Tantorum, miserere animi non digna ferentis.
His lacrimis vitam damus, et miserescimus ultro.—2, 141–145

High School Department

159TH EXAMINATION

VIRGIL'S AENEID

Tuesday, June 13, 1899—1.15 to 4.15 p. m., only

Answer the first six questions and four of the others but **no more.** *If more than four of the others are answered only the first four answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1–5 Translate into English

a THE WOODEN HORSE BROUGHT IN

Dividimus muros et moenia ***pandimus*** urbis.
Accingunt omnes operi, ***pedibus***que rotarum
Subiiciunt lapsus, et stuppea vincula collo
Intendunt. *Scandit fatalis machina muros,*
Feta *armis.* Pueri circum innuptaeque puellae
Sacra *canunt,* funemque manu contingere gaudent.
Illa subit, mediaeque minans ***inlabitur*** urbi.
O ***patria,*** o ***divom domus*** Ilium, et incluta ***bello***
Moenia Dardanidum! quater ipso in limine portae
Substitit, atque utero sonitum quater arma dedere.
—2, 234–243

b DEPARTURE OF AENEAS

Sequimur te, sancte deorum,
Quisquis es, inperioque iterum paremus ovantes.
Adsis o placidusque iuves, et sidera caelo
Dextra feras. Dixit, ***vagina***que ***eripit ensem***
Fulmineum, strictoque ferit retinacula ***ferro.***
Idem omnis simul ardor habet, ***rapiuntque ruuntque;***
Litora deseruere; latet sub classibus ***aequor;***
Adnixi *torquent* spumas et caerula verrunt.—4, 576–583

c THE UNTIMELY DEAD

Occupat *Aeneas* aditum ***custode sepulto,***
Evaditque celer ripam ***inremeabilis undae.***
Continuo auditae voces, ***vagitus*** et ***ingens,***
Infantumque ***animae*** flentes in limine primo,
Quos dulcis vitae ***exsortis*** et ab ubere raptos
Abstulit atra dies et ***funere*** mersit ***acerbo.***
Hos iuxta falso damnati ***crimine mortis.***—6, 424–430

6 Translate into Latin [Do not use rare or poetic constructions]:

a O ye muses, teach a beautiful song to this poet!

b Though you may not believe me, you can not deny that Gallus speaks the truth.

7 Translate into Latin [Do not use rare or poetic constructions]:

a She warned him not to look back.

b I warn you that if you look back you will fall into the flames.

c Let us yield to no one.

8 Give the reason for the mode of *excipere*, *redderet* (*a*), *respexeris* (*b*), *legat*, *neget* (*c*); for the case of *Lycisca* (*a*), *cantando* (*a*, line 5), *rivo*, *sponte* (*b*), *tibi* (*c*).

9 Narrate the story of *Arethusa* (*c*). Give an account of Maecenas.

10 Decline *Amarylli*, *rivo fluenti*, *deos*, *altaria* (*b*). Give the logical conclusion (in either Latin or English) of the condition *Si nescis* (*a*).

11 Give the reason for the mode of *clamarem*, *meruisset*, *disperdere* (*a*), *moror*, *sit* (*b*), *subterlabere* (*c*). Give the syntax of *tibi* (*a*), *domum*, *sibi* (*b*), *fluctus* (*c*).

12 Give an account of the Pandean pipes; of the origin and nature of amoebean verse.

13 Give the principal parts of *victus* (*a*), *concede* (*c*). Give *one* English word derived from the present stem and *one* derived from the supine stem of *each* of these verbs. Give *two* Latin words derived from the stem of *miserum* (*a*).

14 Write the last *two* lines of (*b*), marking quantity of syllables, division into feet and principal cesuras. Account for the quantity of *qui;* of the ultima in *credimus*, *fingunt;* of the penult in *somnia*, *parcite*, *carmina*.

15 Translate into English:

Omnia, quae, Phoebo quondam meditante, beatus
Audiit Eurotas iussitque ediscere laurus,
Ille canit: pulsae referunt ad sidera valles;
Cogere donec ovis stabulis numerumque referri
Iussit et invito processit Vesper Olympo.—6, 82–86

High School Department

157TH EXAMINATION

LATIN—Second Year

Thursday, January 26, 1899—1.15 to 4.15 p. m., only

Answer the first six questions and four of the others but **no more.** *If more than four of the others are answered only the first four answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1-5 Translate into English:

a MILTIADES ADVISES THE DESTRUCTION OF THE BRIDGE

Hic cum *crebri* afferrent nuntii, *male* rem gerere Darium premique ab Scythis, Miltiades hortatus est pontis custodes, ne a fortuna datam occasionem liberandae *Graeciae* dimitterent. Nam si cum his copiis, quas secum transportaverat, interisset Darius, non solum Europam fore tutam, sed etiam eos, qui Asiam *incolerent* Graeci genere, liberos a Persarum futuros *dominatione* et periculo. Id et *facile* effici posse; ponte enim *rescisso*, regem vel hostium *ferro* vel inopia paucis diebus interiturum.—Miltiades, 3

b DESTRUCTION OF THE HERMAE

Bello Peloponnesio hujus consilio atque auctoritate Athenienses bellum Syracusanis indixerunt; ad quod gerendum ipse *dux* delectus est; duo praeterea collegae dati, Nicias et Lamachus. Id cum *appararetur*, prius quam classis *exiret*, accidit, ut una *nocte* omnes Hermae, qui in oppido erant *Athenis*, dejicerentur, praeter unum, qui ante januam erat Andocidi. Itaque ille postea Mercurius Andocidis vocitatus est. Hoc cum appareret non sine magna multorum consensione *esse factum*, quod non ad privatam, sed ad publicam rem pertineret, magnus *multitudini* timor est injectus, ne qua repentina *vis* in civitate exsisteret, quae libertatem opprimeret populi.—Alcibiades, 3

c OLD AGE OF TIMOLEON

Hic cum aetate jam provectus esset, sine ullo *morbo lumina* oculorum amisit. Quam calamitatem ita *moderate tulit*, ut neque eum querentem quisquam *audierit*, neque *eo* minus privatis publicisque rebus interfuerit. Veniebat autem in *theatrum*, cum ibi concilium populi *haberetur*, propter valetudinem vectus *jumentis* junctis, atque ita de vehiculo, *quae* videbantur,

dicebat; neque hoc illi quisquam tribuebat superbiae. Nihil enim umquam neque *insolens* neque gloriosum ex *ore* ejus exiit.
—Timoleon, 4

6 Translate into Latin [Do not use rare or poetic constructions]:

a The leaders, the friends of Pausanias, ordered him not to go to the city.

b The Athenians said that their enemies had been conquered by him in many battles on land and sea.

7 Translate into Latin [Do not use rare or poetic constructions]:

a The slaves whom Timoleon had freed loved him so well that they wished him to be king.

b The Carthaginians recalled Hannibal from Italy because Scipio had carried the war into Africa.

8 Give the syntax of *Graeciae*, *dominatione*, *ferro* (*a*), *dux*, *nocte*, *Athenis*, *multitudini* (*b*), *eo*, *jumentis*, *quae* (*c*).

9 Select from the above passages examples of *five* different kinds of subordinate clauses, stating in each case the kind of clause selected.

10 Give the principal parts of *incolerent*, *rescisso* (*a*), *appararetur* (*b*). Conjugate *tulit*, *haberetur* (*c*) in the voice, mode and tense here found.

11 Compare *male*, *facile* (*a*), *moderate* (*c*), *crebri* (*a*), *insolens* (*c*).

12 Translate into English:

Conversa subito fortuna est. Ut Antonius rediit in Italiam, nemo non magno in periculo Atticum putarat propter intimam familiaritatem Ciceronis et Bruti. Itaque ad adventum imperatorum de foro decesserat, timens proscriptionem, latebatque apud P. Volumnium, cui, ut ostendimus, paulo ante opem tulerat.
—Atticus, 10

13 Give *all* the participles, active and passive, of *esse factum* (*b*). Decline the present participle of *exiret* (*b*). Conjugate *audierit* (*c*) in the imperative, active and passive.

14 Decline throughout *vis* (*b*), *morbo*, *lumina*, *theatrum*, *ore* (*c*).

15 Mention (*a*) *three* Greek generals prominent in the Persian wars whose lives were written by Nepos, (*b*) *two* Greek generals prominent in the Peloponnesian war whose lives were written by Nepos. Sketch the life of *one* of these generals.

b It will be easy for the soldiers to besiege this town; for its walls are of wood.

c The orator must persuade the people.

7 Translate into Latin [Do not use rare or poetic constructions]:

a What citizen does not know Miltiades and Themistocles? Who does not condemn the former and praise the latter?

b The Athenians conquered the enemy in so many naval battles that they added a large number of ships to their fleet.

8 Give the reason for the case of *cujus*, *deo* (*a*), *diuturnitate* (*b*), *industria*, *ei* (*c*); for the mode of *dicerentur* (*a*), *venit*, *fuerant* (*b*), *reperiri*, *fuerit* (*c*).

9 Compare *superiores* (*a*) [Give all forms]. Compare *sollers*, *senior*, *facile* (*c*). Form an adverb from *each* of the following: *peritus*, *probabilis* (*c*).

10 Conjugate *dicerentur* (*a*) in the perfect subjunctive passive; *exarsit* (*b*) in the present indicative active, in the future indicative active; *arripuerat* (*c*) in the future indicative passive. Give *all* the participles of *impetrarint* (*b*).

11 Give the reason for the case of *murum*, *consilio*, *Troezena* (*a*), *quorum* (*b*), *quarum* (*c*); for the mode of *munirent*, *valeret*, *esse* (*a*), *deleta est* (*b*), *possit* (*c*).

12 Write explanatory (not grammatic) notes on *pugnam Marathoniam*, *Delphos* (*a*).

13 Decline *nemo* (*a*), *rem publicam*, *se* (*b*), *studium* (*c*). Decline *milium* (*b*) in the plural.

14 Give the derivation or composition of *adventu*, *totidem*, *triremes* (*a*), *aliter*, *perterriti* (*b*), *probabilis* (*c*). Distinguish in meaning between *moenibus* and *murum* (*a*); between the singular and the plural of *litterarum* (*c*)

15 Translate into English:

Huc ubi perventum est, cum propter aetatem pedibus jam non valeret vehiculoque portaretur, magni concursus sunt facti, cum alii, reminiscentes veteris famae, aetatis misererentur; plurimi vero ira exacuerentur propter proditionis suspicionem Piraei, maximeque quod adversus populi commoda in senectute steterat.—Phocion, 4

University of the State of New York

Examination Department

159TH EXAMINATION

LATIN — Third Year

Tuesday, June 13, 1899 — 1.15 to 4.15 p. m., only

Answer the first six questions and four of the others but **no more.** *If more than four of the others are answered only the first four answers will be considered. Division of groups is not allowed. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1–5 Translate into English:

a THE SIEGE OF DYRRHACHIUM

Jamque frumenta *maturescere* incipiebant; atque ipsa spes inopiam sustinebat, quod celeriter se *habituros* copiam *confidebant.* Crebreque voces militum in vigiliis colloquiisque audiebantur, prius se *cortice* ex arboribus victuros, quam Pompeium e manibus dimissuros. Frequenter etiam ex perfugis *cognoscebant*, *equos* eorum vix tolerari, reliqua vero jumenta interisse.

—Caesar, De bello civili, 3, 49

cortex = bark, *perfuga* = deserter

b VALUE OF A LASTING FRIENDSHIP

Sed quoniam res humanae fragiles caducaeque sunt, semper aliqui anquirendi sunt quos *diligamus* et a *quibus* diligamur: *caritate* enim benevolentiaque sublata omnis est e vita sublata jucunditas. *Mihi* quidem Scipio, quamquam *est* subito *ereptus*, vivit tamen semperque vivet; virtutem enim amavi illius viri quae exstincta non est. Nec mihi soli versatur ante oculos . . . sed etiam *posteris* erit clara et insignis. Nemo unquam animo aut *spe* majora suscipiet qui *sibi* non illius memoriam atque imaginem proponendam putet. Equidem ex omnibus rebus quas mihi aut fortuna aut natura tribuit, nihil habeo quod cum amicitia Scipionis possim comparare.

—Cicero, De amicitia, 102–103

caducus = perishable, *anquiro* = seek

c NIGHT ATTACK ON THE TROJAN CAMP

Egressi superant fossas, noctisque per umbram
Castra inimica petunt, multis tamen ante futuri
Exitio. Passim *somno* vinoque per herbam
Corpora *fusa* vident, arrectos *litore* currus,
Inter lora rotasque viros, simul arma iacere,
Vina simul. Prior Hyrtacides sic ore locutus:
Euryale, audendum dextra; nunc ipsa vocat res.
Hac iter est. Tu, ne qua manus se attollere nobis
A tergo *possit*, custodi et consule longe.

custodio = watch —Virgil, Aeneid, 9, 314–322

6 Translate into Latin [Do not use rare or poetic constructions]:

I received your letter on the first day of April. Shall I let the enemy escape or shall I follow as quickly as possible?

7 Translate into Latin [Do not use rare or poetic constructions]:

No citizen who loves the republic will retain his hatred of Caesar; for this man, while he was general, conquered many nations for the Roman people.

8 Give the reason for the mode of *maturescere*, *habituros*, *confidebant* (*a*), *diligamus*, *est ereptus* (*b*), *possit* (*c*). Write the principal parts of *cognoscebant* (*a*), *fusa* (*c*).

9 Give the syntax of *cortice*, *equos* (*a*), *quibus*, *caritate*, *mihi* (*b*, line 4), *posteris*, *spe*, *sibi* (*b*), *somno*, *litore* (*c*).

10 Translate into English:

De re publica vostra, cujus curator huc missus es, paucis accipe. Bellum ego populo Romano neque feci neque factum umquam volui; finis meos advorsum armatos armis tutatus sum. Id omitto, quando vobis ita placet; gerite quod voltis cum Jugurtha bellum.—Sallust, Bellum Jugurthinum, 110

11 Give a brief account of *two* of the following: Jugurtha, Pompey, Aeneas, Cicero.

12 Translate into English:

Nullas Germanorum populis urbes habitari satis notum est, ne pati quidem inter se junctas sedes. Colunt discreti ac diversi, ut fons, ut campus, ut nemus placuit. Vicos locant non in nostrum morem conexis et cohaerentibus aedificiis; suam quisque domum spatio circumdat.

—Tacitus, Germania, 16

13–14 Translate into English:

Ego te commendare non desisto, sed quid proficiam ex te scire cupio. Spem maximam habeo in Balbo, ad quem de te diligentissime et saepissime scribo. Illud soleo mirari, non me totiens accipere tuas litteras, quotiens a Quinto mihi fratre adferantur. In Britannia nihil esse audio neque auri neque argenti. Id si ita est, essedum aliquod capias suadeo et ad nos quam primum recurras. Sin autem sine Britannia tamen adsequi quod volumus possumus, perfice ut sis in familiaribus Caesaris. Multum te in eo frater adjuvabit meus, multum Balbus, sed, mihi crede, tuus pudor et labor plurimum.

—Cicero, Ad familiares, 7, 7

essedum = war chariot

15 Write Latin sentences in which *quo minus*, *nisi*, *quin*, *ut primum* and *dummodo* are used to introduce subordinate clauses.

High School Department

159TH EXAMINATION

LATIN PROSE COMPOSITION

Monday, June 12, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Division of groups is not allowed. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

Translate into Latin [Do not use rare or poetic constructions]:

1 When the ambassadors returned to him, he said that he would not permit them to go through the province.

2 There is no nation that the Romans fear, no king who can make war on our people.

3–4 The Aedui came to complain because the Germans were laying waste their fields. Caesar was greatly disturbed by these reports and thought that he ought to hasten to that country lest the soldiers of Ariovistus should conquer it.

5 All the states of Thessaly presented him with crowns of gold and statues of bronze.

6 If he had desired to say anything regarding these affairs, he would have been given the opportunity.

7–8 Summoning the lieutenant, Caesar advised him to avoid all suspicion of evil. He surrounded him with guards in order to find out what he did and with whom he talked.

9–10 Themistocles was great both in war and in peace. In war under his leadership the Athenians were victorious in many battles. In peace he planned for the advantage and dignity of the state.

11 When the Lacedaemonians heard that the Athenians were about to rebuild the walls, they sent ambassadors to Athens to forbid the work.

12–13 On that night you were at the house of Laeca. You declared that you were about to depart. You said that you were delaying at Rome for a short time because I was alive.

14 Agesilaus is said to have saved Sparta from destruction by his wise counsel.

15 The orator said that it was the duty of the senate to defend the lives of all the citizens.

complain = *queror*, disturb = *commoveo*, hasten = *contendo*, opportunity = *facultas*, avoid = *vito*, advantage = *utilitas*, rebuild = *restituo*, forbid = *veto*

High School Department

156TH EXAMINATION

ARITHMETIC

Tuesday, September 27, 1898—9.15 a. m. to 12.15 p. m., only

Answer the first five questions and five of the others but **no more.** *If more than five of the others are answered only the first five answers will be considered. Give all operations (except mental ones) necessary to find results. Reduce each result to its simplest form and mark it Ans. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *integer*, *quotient*, *prime factor*, *ratio*, *interest*.

2 Write in arabic notation MDCCCLXIV, CM, DV. Write in roman notation 999. 1776.

3 Simplify $\frac{2\frac{2}{5}+1.7\div 2\frac{4}{15}}{\frac{9}{5}\times\frac{21}{8}}$

4 Find in liters the capacity of a rectangular tank $2\frac{1}{5}$ meters long, $6\frac{1}{2}$ decimeters wide and 35 centimeters deep.

5 Find the interest on $465 at 5% from May 1, 1898 to the present date.

6 Express $\frac{7}{16}$ and $\frac{18}{25}$ as decimal fractions; add these decimals and express their sum as an improper fraction.

7 Find the greatest common divisor of 3082, 1518 and 1840.

8 A grocer buys 20 bushels of potatoes at 75 cents a bushel and sells them at 30 cents a peck; find his entire gain and his gain per cent.

9 A dealer buys 6 cords of wood at $4 a cord and 8 tons of coal at $4.50 a ton; he sells the wood at 80 cents a cord foot and the coal at 30 cents a hundredweight. Find his entire gain.

10 Find the cost of papering the walls and ceiling of a room 18 feet by 14 feet, and 10 feet high, with paper, each roll of which is 2 feet wide and 6 yards long, at 50 cents a roll, allowing 64 square feet for openings.

11 Find in gallons the capacity of a cylindric vessel 2 feet in diameter and 4 feet deep.

12 Bought U. S. 4% bonds at $115\frac{3}{8}$ (brokerage $\frac{1}{8}$%) to the amount of $5000 face value; find the annual income and the rate of interest on the investment.

13 A three months note for $650, due October 1, was discounted at a bank August 14 at 6%; find the proceeds.

14 Find the square root of 19 correct to *three* decimal places.

15 A bicyclist traveling 8 hours a day goes 576 miles in 6 days; find how far he can go in 10 days if he travels 6 hours a day at the same rate per hour. [Solve by proportion.]

High School Department

157TH EXAMINATION

ARITHMETIC

Tuesday, January 24, 1899—9.15 a. m. to 12.15 p. m., only

Answer the first five questions and five of the others but **no more.** *If more than five of the others are answered only the first five answers will be considered. Give all operations (except mental ones) necessary to find results. Reduce each result to its simplest form and mark it Ans. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *five* of the following: *prime number*, *subtrahend*, *improper fraction*, *decimal*, *least common multiple*, *root*, *proceeds*, *antecedent*.

2 Simplify $(\frac{20}{39} \times \frac{52}{64} + 3\frac{5}{6}) \times \frac{3}{17} - (.75 \div \frac{15}{4})$

3 Find the least common multiple of 84, 126 and 540.

4 Find the weight in kilograms of the water which fills a tank whose interior is 380 centimeters long, $23\frac{1}{5}$ decimeters wide and .35 meters deep.

5 Find the interest on $535 at $4\frac{1}{2}$% from September 9, 1898 to the present time.

6 Reduce $\frac{7}{20}$, $\frac{11}{16}$ and $\frac{18}{125}$ to decimals; from the sum of these decimals subtract .4315, and express the result as a common fraction.

7 A, B and C together have $160; twice A's money is equal to half of B's money, and C has $\frac{3}{5}$ as much as A and B together. How much has each?

8 David Palmer borrows this day of Samuel Hill $350, and gives his note for this amount for 4 months at 6%. Make out the promissory note in proper form.

9 A man buys 2 acres of land at $600 an acre; he sells 15 lots, 50 feet by 100 feet each, at $150 a lot, and the remainder of the land at 5 cents a square foot. Find his entire gain.

10 Find the cost of 5 sticks of timber, each 20 feet long and 6 inches by 9 inches, at $16 a 1000 feet board measure.

11 Find the cost of carpeting a room 18 feet long and 12 feet wide with carpet $\frac{3}{4}$ of a yard wide at $1.25 a yard.

12 United States 4% bonds, to the amount of $20000 face value, are bought at $122\frac{5}{8}$ (brokerage $\frac{1}{8}$%); find the cost of the bonds and the rate of income on the investment.

13 A base ball 'diamond' is 90 feet square; find in inches the distance between two diagonally opposite corners of the diamond.

14 The roof of a stable is 30 feet long; the distance between the eaves is 16 feet, and the hight of the ridge above the eaves is 6 feet. Find the number of square feet in the roof.

15 A wagon wheel makes 336 revolutions in rolling 1 mile; find the diameter of the wheel.

University of the State of New York

High School Department

158TH EXAMINATION

ARITHMETIC

Tuesday, March 28, 1899—9.15 a. m. to 12.15 p. m., only

Answer the first five questions and five of the others but **no more.** *If more than five of the others are answered only the first five answers will be considered. Give all operations (except mental ones) necessary to find results. Reduce each result to its simplest form and mark it Ans. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Write in arabic notation eight hundred eight thousand eighty-eight and eight ten-thousandths. Express in words 61,056.003. Write in roman notation 1861.

2 Simplify $\frac{5\frac{5}{8} \times \frac{12}{27} \div 2.5}{3\frac{3}{26} \div \frac{36}{39} \times \frac{16}{45}} + 2.75 - \frac{4}{5}$

3 Find in kilograms the weight of a bar of lead 7.2 decimeters long, 4½ centimeters wide and 25 millimeters thick, lead being 11.35 times as heavy as water.

4 A sum of money at 5% simple interest amounts in 1 year, 9 months and 18 days to $1395.20; find the principal.

5 Find the least common multiple of 126, 154 and 280.

6 Make a receipted bill of the following: James Ladd sold this day to Samuel Pierce 3 lbs. tea at 65 cents, 10 lbs. sugar at 5½ cents, 15 yards muslin at 8 cents, 2 barrels potatoes at $2.50.

7 Find the square root of 731.7025

8 Find the cost of plastering the walls and ceiling of a room 14 feet long, 10 feet wide and 9 feet high at 35 cents a square yard, making an allowance of one half for 2 doors each 3 feet by 7 feet, and 3 windows each 2 feet 8 inches by 6 feet.

9 Find in liters the capacity of a cistern 25 decimeters square and 3 meters deep.

10 If cranberries are bought at $4 a bushel, at what price per quart must they be sold in order to gain 20%?

11 Find the cost of digging a ditch 20 rods long, 4½ feet deep and 18 inches wide at 25 cents a cubic yard of excavation.

12 A has twice as much money as B, and C's money is equal to the sum of one third A's money and one half B's money; the three together have $25. How much has each?

13 At what price must 4% stock be bought so that the investment may yield 5%?

14 A note for $500, at 6%, dated May 25, 1898, payable in one year, has the following indorsements: Aug. 1, 1898, $150; Feb. 21, 1899, $250. Find the amount due at maturity.

15 A calf fastened to a stake by a chain 27 feet long can reach 1 foot beyond the end of the chain; compute the area over which the calf can graze.

High School Department

157TH EXAMINATION

ADVANCED ARITHMETIC

Monday, January 23, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Give each step of solution, indicating the operations by appropriate signs. Use cancelation when possible. Reduce fractions to lowest terms. Express final result in its simplest form and mark it Ans. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *present worth*, *power*, *proportion*, *root*, *annuity*.

2 Change 243576 in the decimal scale to an equivalent number whose scale is 8.

3 Multiply 57.2958 by 1.732 and divide the product by 2.236, finding the result correct to *three* decimal places and using contracted methods of multiplication and division of decimals.

4 Find by division the greatest common divisor of 2041 and 8476; demonstrate clearly the correctness of this method.

5 Reduce $.6\dot{5}7142\dot{8}$ to a common fraction.

6 A druggist buys 20 lbs. avoirdupois of potassium bromid at 60 cents a pound, and sells it at 10 cents an ounce troy; find his per cent of gain.

7 Express in feet or inches *each* of the following: cubit, ell, hand, fathom, chain.

8 A dealer buys a ship-load of coal at $4 a long ton and sells it at $5 a short ton, thus gaining $1600; find the number of long tons bought.

9 A merchant buys goods listed at $1200 and gets trade discounts of 33⅓, 20 and 10 with 90 days credit, or a further discount of 2% for cash. How much will he gain by paying cash if he can borrow money at 6%?

10 A merchant buys 100 pieces of silk in Paris at 400 francs a piece, exchange at 5.16; the shipping charges are $60, and the duty is 45% ad valorem. If the silk is sold at $150 a piece, what is the per cent of gain?

11 Find in millimeters the edge of a cube equivalent to a sphere whose radius is 3 decimeters.

12 Find in gallons the capacity of a cylindric tank 30 feet long and 4 feet in diameter.

13 When it is 3 p. m. at Rome, longitude 12° 27′ east, it is 8.20 a. m. at Chicago; find the longitude of Chicago.

14 Find the sum of 12 terms of the series 9, 6, 4, etc.

15 On a note for $800 at 6%, dated March 9, 1897, the following payments have been made: May 15, 1897, $120; Aug. 1, 1897, $100; Jan. 19, 1898, $200; Sept. 21, 1898, $250. Find the amount due to-day.

University of the State of New York

High School Department

159TH EXAMINATION

ADVANCED ARITHMETIC

Monday, June 12, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Give each step of solution, indicating the operations by appropriate signs. Use cancelation when possible. Reduce fractions to lowest terms. Express final result in its simplest form and mark it Ans. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *quinary scale, repetend, draft, reciprocal, true discount.*

2 Find the product of 376.259 by 2.6457 to *three* decimal places. Prove by division, using contracted methods in both cases.

3 Find in kilograms the weight of the water that fills a cylindric tank 3 meters deep and 15 decimeters in diameter.

4 On what invariable unit does the length of the standard yard of England depend? How is this yard determined?

5 State the equivalent for $100 United States gold in the money of (*a*) England, (*b*) France, (*c*) Germany. Write the table of money for each of the countries mentioned.

6 Find in millimeters the diameter of a solid sphere of lead weighing 10 kilograms. (Specific gravity of lead = 11.35.)

7 A ship's chronometer set at Greenwich at noon June 1 loses ¾ seconds a day; at noon November 20, the chronometer indicates 4 hours 35 minutes past noon. Find longitude of the ship.

8 The altitude of a right circular cone is 12 inches, and the diameter of its base is 10 inches; find the volume of a similar cone whose slant hight is 26 inches.

9 A dry-goods merchant marks a piece of silk at 50% above cost price and sells it at $2.40 a yard, which is a discount of 20% on marked price; find cost price and gain per cent.

10 A speculator buys 100 shares of stock at 87⅛ and sells them at 89¼, brokerage ⅛% in each case; find his entire gain.

11 Find the present worth of a debt of $600 due December 1, 1899, money being worth 5%.

12 A merchant buys goods on credit January 10 as follows: $200 due in 3 months, $500 due in 4 months, $350 due in 2 months; find the equated time of payment.

13 W. Brown & Co., of London, ship 200 cases of cutlery, at £4, 10 s. a case, to Brooks Bros., New York, who draw at sight, June 10, 1899, on Wood & Robson, their London agents, to settle the account. Write the bill of exchange and find its cost, exchange being quoted at 4.87½.

14 Find the 12th term of the series 32, 24, 18, etc.

15 On a note for $3500 at 5%, dated Sept. 1, 1897, the following payments have been made: Jan. 1, 1898, $700; May 18, 1898, $50; Oct. 27, 1898, $1500. Find the amount due to-day.

High School Department

156TH EXAMINATION

ALGEBRA

Thursday, September 29, 1898—9.15 a. m. to 12.15 p. m., only

Answer the first five questions and five of the others but **no more.** *If more than five of the others are answered only the first five answers will be considered. Division of groups is not allowed. Give each step of solution. Reduce fractions to lowest terms. Express final result in its simplest form and mark it Ans. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Simplify $\dfrac{\dfrac{3a+b}{2a-b}-\dfrac{3a-b}{2a+b}}{\dfrac{2a}{4a^2-b^2}}$

2 Simplify $x-[y-2(x-\overline{y-2z})+2x-3y]-z$

3 Solve $\begin{cases} \dfrac{x+y}{4}+\dfrac{x-y}{3}=5 \\ 2x-3(x-2y)=9 \end{cases}$

4 Solve $\dfrac{2x+a}{b}-\dfrac{2a-x}{a}=\dfrac{3x-b}{b}$

5 Solve $6-x=12x^2$. Prove correctness of the result.

6 Find prime factors of $3x^2-6x-105$

$1+m^2+m^4$

$64-b^6$

$a^{3m}+b^{3n}$

$2x-xy+2y-y^2$

7 Expand by the binomial theorem $\left(2a^2-\frac{b}{2}\right)^7$ to 4 terms. Show how the coefficients are formed.

8 Extract the square root of $9x^6-24x^5+13x^4+4x^3+\frac{x^2}{4}$

9 Solve $\sqrt{2x+3}-\sqrt{2x-2}=\sqrt{8x-23}$

10 Simplify $\sqrt[6]{27}$, $\sqrt[3]{54}$, $\sqrt[a]{x^{2a}y^{3ab}z^{am}}$, $\dfrac{3\sqrt{50}+\sqrt[4]{4}-2\sqrt{\frac{1}{2}}}{\sqrt{18}}$

11 Express the interest on p dollars at r per cent for n years.

12–13 The sum of two numbers is 10 and the sum of their squares is 58; find the numbers.

14–15 Solve $\begin{cases} 2xy-x^2=16 \\ 3xy-y^2=5 \end{cases}$

High School Department

155TH EXAMINATION

PLANE GEOMETRY

August 1898 — Three hours, only

Answer eight questions including one from each of the three divisions. If more than eight are answered only the first eight answers will be considered. Draw carefully and neatly each figure in construction or proof, using letters instead of numerals. Arrange work logically. Each complete answer will receive 12½ credits. Papers entitled to 75 or more credits will be accepted.

First division 1 Define *plane angle*, *polygon*, *axiom*, *secant*, *apothem.* Illustrate each.

2 Prove that the sum of the interior angles of a triangle is equal to two right angles and state a theorem in the demonstration of which this fact is used.

3 Prove that parallel lines intercept equal arcs of a circumference.

4 Prove that in any triangle the square on the side opposite an acute angle is equal to the sum of the squares on the other two sides diminished by twice the product of one of those sides by the projection of the other on that side.

5 Assuming that the area of a regular polygon equals one half the perimeter by the apothem, and the circumference of a circle equals $2\pi r$, prove that the area of the circle is equal to πr^2. What is π?

Second division 6 The difference of two adjacent interior angles of a parallelogram is A; find the value of each angle in terms of A.

7 Find the length of the longest and of the shortest chord that can be drawn through a point 5 inches from the center of a circle whose radius is 13.

8 In a circle whose radius is 7 find the area of the segment whose arc is 90°.

9 Given a right triangle whose hypotenuse is 10 and shortest side 6; find the perimeter and area of a similar triangle whose shortest side is 2.

10 Find the side of a square equivalent to a trapezoid whose upper base is 10, altitude 12 and legs each 13.

Third division 11 Construct a line which shall be to a given line as $\sqrt{3} : 1$

12 If one leg of an isosceles triangle is produced its own length through the vertex, prove that the line drawn from its extremity to meet the other leg at the base is perpendicular to the base.

13 Construct a circle with a given radius tangent to two intersecting lines.

14 Prove that the sum of two opposite angles of an inscribed quadrilateral equals the sum of the other two.

15 Construct an equilateral triangle equivalent to a given square.

High School Department

156TH EXAMINATION

PLANE GEOMETRY

Wednesday, September 28, 1898—9.15 a. m. to 12.15 p. m., only

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Answer eight questions including one from each of the three divisions. If more than eight are answered only the first eight answers will be considered. Draw carefully and neatly each figure in construction or proof, using letters instead of numerals. Arrange work logically. Each complete answer will receive 12½ credits. Papers entitled to 75 or more credits will be accepted.

First division 1 Define *axiom, scalene triangle, tangent, sector, segment.*

2 Prove that if two angles have their sides respectively parallel they are either equal or supplementary.

3 Prove that two triangles are equal if they have three sides of the one equal respectively to three sides of the other.

4 Prove that two triangles are similar if they have their sides respectively perpendicular or parallel.

5 Deduce the formula for the area of a circle. Prove that the areas of circles are to each other as the squares of their radii.

Second division 6 If the sum of the interior angles of a polygon is equal to four times the sum of the exterior angles, how many sides has the polygon?

7 The shortest chord that can be drawn through a point 8 inches within the circumference of a given circle is 24 inches long; find the length of the diameter of the circle.

8 Find the area of a rhombus whose perimeter is 20 inches and difference of diagonals 2 inches.

9 A quadrilateral is inscribed in a circle; the first arc is half the second, the second is half the third, and the fourth equals 80°; find the value in degrees of the angles formed by the intersection of the diagonals of the quadrilateral.

10 Find the radius of a circle circumscribed about an equilateral triangle whose side is a.

Third division 11 Construct a circle with a given radius and tangent to two given intersecting lines.

12 Construct a pentagon equivalent to a given octagon and similar to a given pentagon.

13 Prove that a parallelogram inscribed in a circle is a rectangle.

14 Prove that the medians of an equilateral triangle form six equal triangles within the original triangle.

15 Find a line which shall be to a given line as $\sqrt{2}:1$

High School Department

159TH EXAMINATION

PLANE GEOMETRY

Wednesday, June 14, 1899—9.15 a. m. to 12.15 p. m., only

Answer eight questions including one from each of the three divisions. If more than eight are answered only the first eight answers will be considered. Draw carefully and neatly each figure in construction or proof, using letters instead of numerals. Arrange work logically. Each complete answer will receive 12½ credits. Papers entitled to 75 or more credits will be accepted.

First division 1 Define *five* of the following: *rhombus, postulate, segment, variable, proportion, similar polygons, sector.*

2 Prove that if two parallel lines are cut by a third line the sum of the interior angles on the same side of the secant line is equal to two right angles.

3 Prove that the radius perpendicular to a chord bisects the chord and the subtended arc.

4 Prove that two mutually equiangular triangles are similar.

5 Prove that the area of a square on the hypotenuse of a right triangle is equivalent to the sum of the areas of the squares on the other two sides.

Second division 6 ABC is a triangle inscribed in a circle whose radius is 2 feet; AB is the diameter of the circle and the angle ABC is 30°. Find the area of the triangle.

7 Find the area of a circle circumscribing a rectangle whose altitude is 6 feet and whose base is 8 feet.

8 Find the length of a tangent drawn to a circle, whose radius is 8 inches, from a point 9 inches from the circumference.

9 AB is the diameter of a circle; AC and BD are chords intersecting at O, and AOD is an angle of 40°. Find the number of degrees in the arc DC.

10 Find the area of a regular hexagon inscribed in a circle whose radius is r.

Third division 11 Show how to construct a square equivalent to a given triangle.

12 Given the lines a, b and c; construct x (1) when $x=\frac{ab}{c}$, (2) when $x=\frac{a^2}{c}$

13 Show how to construct a circle equivalent to the sum of two given circles.

14 In the parallelogram $ABCD$, E and F are the middle points of the sides BC and AD respectively; prove that the lines AE and CF trisect the diagonal BD.

15 Through P, the point of tangency of two circles, a line MPN is drawn cutting the circles at M and N; prove that the tangents drawn through M and N are parallel.

High School Department

157TH EXAMINATION

SOLID GEOMETRY

Friday, January 27, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Draw carefully and neatly each figure in construction or proof, using letters instead of numerals. Arrange work logically. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *pyramid*, *regular polyedron*, *generatrix*, *cylinder of revolution*, *great circle*.

2 Prove that through a given point in a given plane one perpendicular to that plane can be drawn and only one.

3 Prove that if two straight lines are intersected by three parallel planes their corresponding segments are proportional.

4 Prove that two diedral angles have the same ratio as their plane angles, when the plane angles are commensurable.

5 Prove that every point in a plane which bisects a diedral angle is equidistant from the faces of the angle.

6 Prove that the sections of a prism made by parallel planes are equal polygons.

7 To what is the volume of a cone equal? Give proof.

8 The base of a pyramid 15 feet high contains 169 square feet; find the distance from the vertex at which a plane must be passed parallel to the base so that the section may contain 81 square feet.

9 Find the volume of a regular pyramid whose hight is 12 feet and whose base is an equilateral triangle each side of which is 5 feet.

10 The hight of a right circular cone is 18 inches and the radius of its base is 3 inches; find the volume of the frustum of this cone made by a plane parallel to the base and 6 inches from it.

11 The diameter of a sphere is 6 decimeters; find the area of a section made by a plane whose distance from the center of the sphere is 18 centimeters.

12 Find the total interior surface of a tunnel 5000 feet long whose section is a semicircle with a radius of 10 feet.

13 A light is placed 3 feet from the center of a sphere whose radius is 1 foot; find in inches the illuminated surface of the sphere.

14 Prove that the square of a diagonal of a rectangular parallelepiped is equal to the sum of the squares of its three dimensions.

15 A is the vertex and BCD the base of a tetrahedron; prove that the section of the tetrahedron made by a plane parallel to both AB and CD is a parallelogram.

High School Department

159TH EXAMINATION

SOLID GEOMETRY

Friday, June 16, 1899 — 1.15 to 4.15 p. m., only

Answer eight questions but **no more.** *If more than eight are answered only the first eight answers will be considered. Division of groups is not allowed. Draw carefully and neatly each figure in construction or proof, using letters instead of numerals. Arrange work logically. Each complete answer will receive 12½ credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *tetrahedron, vertical diedral angles, regular prism, directrix, element.*

2 State *four* sets of conditions that determine the position of a plane.

3 Prove that the intersections of two parallel planes by a third plane are parallel lines.

4 Prove that if two planes are perpendicular to each other, a straight line drawn in one of them perpendicular to their intersection is perpendicular to the other.

5 Prove that two rectangular parallelepipeds which have equal bases are to each other as their altitudes, when these altitudes are incommensurable.

6 Prove that the volume of a triangular prism is equal to the product of its base by its altitude.

7–8 Complete and demonstrate the following theorem: the frustum of a triangular pyramid is equivalent to the sum of three pyramids whose . . .

9 Prove that the surface of a sphere is equal to the product of its diameter by the circumference of a great circle.

10 Prove that every section of a prism made by a plane parallel to the lateral edges is a parallelogram.

11 The altitude of a right prism is 10 units, and its base is a regular hexagon inscribed in a circle whose radius is 3 units; find the volume of the prism.

12 The altitude of a right circular cone is 18 inches and the radius of its base is 4 inches; find the volume and lateral surface of the cone.

13 A sphere of lead 6 inches in diameter is recast into the form of a cylinder 8 inches in diameter; find the hight of this cylinder.

14 A regular pyramid 15 inches high has for a base a square whose sides are each 3 inches; find the volume of the frustum of this pyramid formed by a plane parallel to the base and 5 inches from the vertex.

15 Find the surface and volume of a sphere circumscribing a cube each edge of which is 6 units.

High School Department

157TH EXAMINATION

PLANE TRIGONOMETRY

Thursday, January 26, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Division of groups is not allowed. A, B and C represent the angles of a triangle, a, b and c the opposite sides, S the area. In a right triangle C represents the right angle and c the hypotenuse. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *radian*, *sine*, *cotangent*, *characteristic*, *complementary angles*.

2–3 Represent graphically six trigonometric functions of an angle of 210°, and find the value and algebraic sign of each function.

4 Express as a function of an angle of 15° *each* of the following: sin 75°, tan 165°, cos 195°, ctn 255°, sec 285°.

5 Express (*a*) in circular measure (in terms of π, or in radians) 60°, 330°, 135°, (*b*) in degrees $\frac{3\pi}{5}$, $\frac{5\pi}{4}$

6 Construct a right triangle whose hypotenuse is 13 units and the tangent of one of whose acute angles is $\frac{5}{12}$.

7 Prove that $\cos (A-B)=\cos A \cos B+\sin A \sin B$

8 Prove that $\tan^2 \frac{1}{2} A=\frac{1-\cos A}{1+\cos A}$

9 Given $\tan^2 A+4 \sin^2 A=6$; find A.

10 Prove that $\csc x-2 \operatorname{ctn} 2 x \cos x=2 \sin x$

11 At a distance of 100 feet from the bottom of a flagstaff the angle of elevation of its top is found to be 52° 45′; find the hight of the flagstaff.

12 An observer at a certain point finds the angle of elevation of the top of a hill to be 32° 20′; from a point on the same level and 200 feet farther from the hill the angle of elevation is 24° 35′. Find the hight of the hill above the level of the observer.

13 Find the area of a triangle in which $A=85° 15'$, $b=78.35$, $c=40.8$.

14–15 A surveyor wishing to find the distance between two buoys, A and B, measures on the shore a base-line, CD, 100 yards long; he finds that angle $ACD=120°$, angle $ADC=42°$, angle $BCD=53°$, angle $BDC=96°$. Find the distance AB.

High School Department

159TH EXAMINATION

PLANE TRIGONOMETRY

Thursday, June 15, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Division of groups is not allowed. A, B and C represent the angles of a triangle, a, b and c the opposite sides, S the area. In a right triangle C represents the right angle and c the hypotenuse. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 If the radius of a circle is 8 inches, find the number of degrees in an arc of 6 inches.

2 Express as a function of an angle of 20° *each* of the following: csc 70°, ctn 110°, sin 340°, sec 200°, cos 250°.

3 Given $\cos A = -\frac{15}{17}$ and A in the third quadrant; find the value and sign of *five* other functions of A.

4 Trace the variation in the value of $\sin A$ and of $\sec A$ as A increases from 0° to 360°.

5–6 Show by diagram the line values of *five* trigonometric functions of an angle of 150°, and find the algebraic sign and numeric value of each function.

7 Prove $\cos 2A = \cos^2 A - \sin^2 A$.

8 Prove that the sides of a triangle are proportional to the sines of the opposite angles.

9 Prove $\tan x - \operatorname{ctn} x = \frac{1 - 2\cos^2 x}{\sin x \cos x}$

10 Given $\tan A + \operatorname{ctn} A = 2$; find A.

11 Given $x = \sqrt[5]{\frac{382 \times 7.13}{25.5 \times .919}}$; $y = \left(\frac{17.3 \times 4.16}{63.95}\right)^{18}$. Find x and y by use of the table of logarithms.

12 In a right triangle, given $A = 36° 45'$, $b = 17.58$; find the perimeter and the area of the triangle.

13 In a triangular field one side, 80 rods long, makes with the adjacent sides angles of 66° 30′ and 81° 50′; find the area of the field.

14–15 From a window on a level with the base of a flagstaff the angle of elevation of the top of the flagstaff is 52° 20′; from another window, 20 feet vertically above the first, the angle of elevation is 44° 35′. Find the hight of the flagstaff and the distance of its base from the lower window.

High School Department

159TH EXAMINATION

SPHERIC TRIGONOMETRY

Tuesday, June 13, 1899 — 1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Division of groups is not allowed. In a spheric triangle A, B and C represent the angles and a, b and c the opposite sides. In a right triangle C represents the right angle and c the hypotenuse. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 If the angles of a spheric triangle are 65°, 80° and 110°, what are the sides of its polar triangle? If the sides of a spheric triangle are 30°, 40° and 50°, what are the angles of its polar triangle?

2 Prove that in any spheric right triangle the sine of the middle part is equal to the product of the tangents of the adjacent parts.

3 Write the *four* formulas known as Napier's analogies.

4–5 In a spheric right triangle $a = 128° 25'$, $b = 82° 18'$; find A, B and c, and check the work.

6–7 Prove that in any spheric triangle

$$\cos a = \cos b \cos c + \sin b \sin c \cos A$$

8–9 In an oblique spheric triangle given a, b and B; show how to find the remaining parts. Discuss the question of one solution, two solutions and no solution.

10–11 Given $A = 34° 15'$, $B = 42° 18'$, $c = 76° 35'$; find a, b and C.

12–13 Assuming the earth to be a sphere of 4000 miles radius, find (*a*) the shortest distance between New York, latitude 40° 30′ north, longitude 74° west, and New Orleans, latitude 30° north, longitude 90° west, (*b*) the bearing of New York from New Orleans.

14–15 A mariner in latitude 42° 20′ north observes that the altitude of the sun is 48° 23′ when its declination is 18° 45′ north; find the hour of the day.

High School Department

157TH EXAMINATION

ASTRONOMY

Thursday, January 26, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *five* of the following: *apogee*, *faculae*, *limb*, *lunation*, *nutation*, *perihelion*, *radius vector*, *saros.*

2 State what important contributions to the science of astronomy were made by (*a*) the Chaldeans, (*b*) Hipparchus, (*c*) Galileo.

3 Give a detailed description of *two* of the following constellations: Lyra, Leo, Ursa Major, Canis Major.

4 Mention *five* characteristics common to all the planets of the solar system.

5 State the difference between the earth's equatorial diameter and its polar diameter, giving the cause and one important effect of this difference.

6 Describe some accurate scientific method of determining the size of the earth.

7 Describe the moon as to (*a*) size, (*b*) length of day, (*c*) surface, (*d*) atmosphere, (*e*) temperature.

8 Explain (*a*) the librations of the moon, (*b*) the phases of the moon.

9 Explain by aid of a diagram the phenomenon of (*a*) a total eclipse of the sun, (*b*) an annular eclipse of the sun.

10 Describe the planet Jupiter as to (*a*) size, (*b*) distance from the sun, (*c*) length of day and year, (*d*) density, (*e*) satellites.

11 Describe the asteroids as to (*a*) number, (*b*) orbits, (*c*) size. Give an account of the first discovery of asteroids.

12 What are *nebulae?* Give the location of *two* important nebulae and state a theory as to their probable destiny.

13 Give a description of the milky way as to appearance and nature.

14 Describe a process for photographing heavenly bodies, and state the advantages of this method of observation.

15 An observer looking toward the south from Washington, north latitude 38° 53′, finds the altitude of *a* Orionis as it crosses the meridian to be 58° 30′; compute the declination of the star.

High School Department

159TH EXAMINATION

ASTRONOMY

Thursday, June 15, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *altitude*, *azimuth*, *cusp*, *elongation*, *parallax*.

2 Mention important contributions to astronomic science made by (*a*) the Greeks, (*b*) Copernicus, (*c*) Herschel.

3 Give a detailed description of *two* of the following constellations: Boötes, Scorpio, Pegasus, Gemini.

4 Mention the principal circle and points of the horizon system and state the situation of each. Define *meridian*, *prime vertical*.

5 Give in order the names of the planets of the solar system and state the size of each. Compare the four small planets with the four large ones as to (*a*) density, (*b*) axial rotation.

6 Write on *one* of the following: sun-spots, precession of the equinoxes.

7 Give *three* proofs that the earth is spheric in shape. Define *obliquity of the ecliptic* and state *one* effect produced by this obliquity.

8 In what *two* ways does the earth's atmosphere affect the length of the period of light received from the sun?

9 Explain *one* of the following phenomena: harvest-moon, meteoric showers, total lunar eclipse.

10 Compare, explaining fully, the appearance of the sun at the horizon with its appearance at the zenith as to (*a*) shape, (*b*) size, (*c*) brilliancy.

11 Describe the planet Venus as to (*a*) distance from the sun, (*b*) length of year and day, (*c*) transits, their frequency and importance.

12 Give the names of *two* important variable stars, stating the constellation in which each is found. State a theory to account for variable stars.

13 Write on *one* of the following: Kirchhoff's discovery, Newton's discovery.

14 Distinguish between mean solar day and apparent solar day. Why is apparent noon sometimes earlier and sometimes later than mean noon?

15 An observer at New Orleans finds the altitude of a Lyrae, as it crosses the meridian, to be 81° 17′; the declination of this star is 38° 41′ north. Find the latitude of New Orleans.

High School Department

155TH EXAMINATION

PHYSICS, part 1

August 1898 — Three hours, only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *inertia*, *cohesion*, *center of gravity*, *potential energy*, *dew-point*.

2 State the law governing the action of liquids in capillary tubes. Describe experiments illustrating this law.

3 Describe an experiment illustrating osmose of liquids.

4 A force of 8 dynes acts at right angles to one of 15 dynes on a movable point; find the magnitude, and indicate by diagram the direction of a third force that will maintain equilibrium.

5 A tower 150 feet high stands on a level plain; if a bullet is shot horizontally from the top of this tower in how many seconds will it strike the ground?

6 Make a diagram of fixed and movable pulleys with a single cord so arranged that a weight of 20 lbs. will balance one of 100 lbs.

7 A pendulum n centimeters long oscillates 50 times a minute; find the length of a pendulum which oscillates 75 times a minute.

8 Explain the phenomenon of the recoil of a gun.

9 Describe an experiment illustrating the transmission of pressure exerted on fluids.

10 Explain by aid of a diagram the action of an artesian well.

11 Find in kilograms the total hydrostatic pressure on the inside of an open tank one meter square and 3 meters deep filled with petroleum. [Sp. gr. petroleum =.84.]

12 A flask whose capacity is 100 cubic centimeters weighs 96 grams when filled with ether, and 25 grams when empty; find the specific gravity of ether.

13 Give directions for preparing some freezing mixture and explain its efficiency.

14 If a liter of air at -20° C. is heated to 50° C. what will be its volume, the pressure remaining constant?

15 Find the temperature of the mixture when 20 grams of zinc at 25° C. are mixed with 20 grams of water at 10° C. [Specific heat of zinc =.095.]

High School Department

156TH EXAMINATION

PHYSICS, part 1

Thursday, September 29, 1898—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Do not reduce metric to other measures. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *five* of the following: *force, impenetrability, inertia, cohesion, ductility, dyne, energy, calory.*

2 Describe an experiment illustrating capillarity.

3 State and illustrate *two* of the three laws of motion.

4 A force of 8 dynes acts on a movable point in a direction due north and a force of 15 dynes acts on the same point in a direction due east; find the magnitude and show by diagram the direction of a third force that will exactly maintain equilibrium.

5 A rod 6 feet long is supported at its extremities by two men; suspended from the rod 2 feet from A's end is a weight of 100 pounds, and 2 feet from B's end a weight of 50 pounds. Find the weight supported by each man.

6 Distinguish between a simple pendulum and a compound pendulum. State *two* laws of the pendulum.

7 Explain by aid of a diagram the motion of the rotary lawn-sprinkler.

8 A rectangular scow 30 meters long and 6 meters wide draws 1 meter of water when empty and 2½ meters when loaded; find in kilograms the weight of the load.

9 A specific-gravity flask, whose capacity is 100 cubic centimeters, weighs 34 grams when empty and 160 grams when filled with glycerin; find the specific gravity of glycerin.

10 Explain by aid of a diagram the action of *one* of the following: artesian wells, intermittent springs.

11 If a strip of lead is rapidly bent back and forth, how is its temperature affected at the point of bending? Explain.

12 Explain some process for manufacturing ice on a commercial scale.

13 Describe a laboratory experiment to illustrate expansion by heat.

14 Mention *two* methods by which heat is diffused and illustrate each.

15 If 2 kilograms of melting ice are mixed with 5 kilograms of boiling water, what will be the resulting temperature? [Latent heat of water = 80.]

High School Department

157TH EXAMINATION

PHYSICS, part 1

Friday, January 27, 1899 — 1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Division of groups is not allowed. Do not reduce metric to other measures. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Mention *three* universal and *two* characteristic properties of matter, defining each property mentioned.

2 Distinguish between (*a*) cohesion and adhesion, (*b*) conduction of heat and convection of heat.

3 Account for (*a*) the spherical form of soap-bubbles, (*b*) the efficiency of blotting-paper.

4 A solution of starch is mixed with one of sugar; describe a method of separating the starch from the sugar.

5 Two forces of 10 dynes each act at right angles on a movable point; opposite one of them a third force of 30 dynes acts on the same point; find the magnitude and show by diagram the direction of the force that will maintain equilibrium.

6–7 A ball is thrown horizontally with a velocity of 100 feet a second from the top of a tower 197 feet high which stands on level ground; show accurately by diagram the path of the ball and find (*a*) how many seconds it falls, (*b*) how far from the tower it strikes the ground.

8 Describe by aid of a diagram some form of compensation-pendulum, explaining its efficiency.

9 The hight of an inclined plane is 5 feet, and its base is 12 feet; find what weight will be sustained on the plane by a power of 200 lbs. acting parallel to (*a*) the plane, (*b*) the base.

10 A cubic decimeter of wood is immersed in water so that the upper surface of the wood is parallel to and 4 decimeters below the surface of the water; find in kilograms the total pressure on the cube of wood.

11 Describe by aid of a diagram the suction-pump, explaining its operation and stating the limit of its efficiency.

12 Describe *two* of the following, stating what important facts or principles they illustrate: Magdeburg hemispheres, Nicholson's hydrometer, Atwood's machine.

13 A mass of lead weighs 22.7 kilograms in air, and 20.7 kilograms when immersed in water; find the volume and the specific gravity of the lead.

14 State (*a*) *two* laws of evaporation, (*b*) *two* laws of ebullition.

15 If 100 grams of granulated tin at 20° C. are mixed with 25 grams of water at 10° C., the temperature of the mixture is 11.82° C.; determine the specific heat of tin.

High School Department

158TH EXAMINATION

PHYSICS, part 1

Tuesday, March 28, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Give all computations in full. Do not reduce metric to other measures. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *five* of the following: *atom*, *elasticity*, *erg*, *power arm*, *pneumatics*, *latent heat*, *dialysis*, *center of oscillation.*

2 Describe an experiment illustrating surface-tension in liquids.

3 Describe an experimental illustration of (*a*) inertia, (*b*) tenacity.

4 State and illustrate the law of reflected motion.

5 A silver dollar is dropped from the Brooklyn bridge, 135 feet above sea-level; how soon will the coin strike the water and what will be its final velocity? (Make no allowances.)

6 A pendulum n centimeters long oscillates 50 times a minute; find the length of a pendulum that oscillates 20 times a minute.

7 State and illustrate *two* of the following: Newton's third law of motion, Pascal's law, Joule's principle, Boyle's law.

8 A bucket weighing 5 kilograms and holding 10 liters is suspended in a well from an axle 15 centimeters in diameter, turned by a wheel 60 centimeters in diameter; find what force must be applied to the wheel to support the bucket full of water. (Make no allowances.)

9 A Fahrenheit hydrometer weighing 100 grams requires 50 grams in the pan to sink it to a certain depth in water; to sink it to the same depth in ether 43.05 grams must be removed from the pan. Find the density (specific gravity) of ether.

10 Find in kilograms the total pressure on the inside of an open tank 1 meter square and 6 decimeters deep, filled with alcohol. (Density of alcohol =.8.)

11 Describe experimental illustrations of the facts that gases are elastic, exert pressure and have weight.

12 Explain the meaning of *two* of the following: moment of a force, neutral equilibrium, coefficient of friction, absolute temperature.

13 Explain the use of vacuum-pans in sugar-refineries and state the principle illustrated.

14 A liter of gas at 0° C. is cooled to -50° C. and the pressure is then doubled; find the resulting volume of the gas.

15 Describe by aid of a diagram the steam-chest, cylinder and piston of a steam engine, and explain their operation.

o more. *If more than 10 are answered only*
considered. Give all computations in full.
r measures. Each complete answer will re-
titled to 75 or more credits will be accepted.

following: *molecule, mass, malleability,*
k, dew-point, specific heat.
rimental illustration of (*a*) indestructi-
lity.
between the elevation of a liquid due to
e diameter of the capillary tube, (*b*) the
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periment illustrating the diffusion of gases.
ertically downward from the top of a tower
hes the ground in 3 seconds; find (*a*) its
the distance traversed in the last second.
pendulum is 25 centimeters long loses 30
w long must the pendulum be in order that
p correct time?
am of an arrangement of fixed and movable
rate cords. Find the force required to sup-
f 100 lbs. suspended as represented in this

lver weighs in air 63 grams, in water 57 grams;
and the density (specific gravity) of the silver.
movable body is held in equilibrium by four
ce of 18 dynes acts due north, one of 40 dynes
ne of 16 dynes due west. Find the magnitude
iagram the direction of the fourth force.
by aid of a diagram the operation of *one* of the
drostatic press, turbine water wheel, force pump.
ch cork (density .24) is required to float in water
neter of iron (density 7.8)?
e an experiment illustrating the effect of change
on the boiling point of liquids.
detailed explanation of some practical method of
uilding by hot water.
ilograms of steam at 100° C. are forced into 20 kilo-
vater at 15° C., to what temperature will the water
(Latent heat of vaporization of water = 537.)

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High School Department

159TH EXAMINATION

GEOLOGY

Friday, June 16, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but no more. *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *crevasse*, *atoll*, *dip*, *peat*, *regelation*.

2 Describe *four* kinds of iron ore.

3 Explain the origin and development of stratification.

4 Describe *four* kinds of calcareous rock.

5 Give *three* causes of fractures and faultings of strata.

6 Explain the influence of carbonated waters on rock formation. Give illustrations.

7 Mention *five* principal causes of degradation of rock.

8 Describe the topography of the bottom of the ocean.

Or

Explain the absence of soil on steep mountain slopes.

9 Mention *one* illustration of glacial action that you have observed.

10 Give *two* principal uses of fossils.

11 Describe the animal life of the Cambrian era.

12 Describe the plant life of the lower Silurian era.

13 Describe the rocks of the lower Cretaceous period in the United States as to (*a*) kind, (*b*) locality.

14 Mention *one* economic use of *each* of the following: mica, guano, nickel, mercury, platinum.

15 Mention *two* counties in New York state where brick is extensively made; *two* where oil wells are found; *two* where mineral paint is found; *two* where glass sand abounds; *two* where mineral springs flow.

High School Department

157TH EXAMINATION

PHYSICAL GEOGRAPHY

Tuesday, January 24, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but no more. *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *equinox*, *looming*, *silt*, *parhelia*, *orology*.

2 Describe the earth as to form, size and mass.

3 Describe *two* kinds of volcanic eruption. Give an example of each kind.

4 What is meant by *zone of fracture?* Mention the parts of the earth's surface included in this zone.

5 What is the typical structure of the great divisions of the globe? Give illustrations.

6 Why has the great low plain of Europe no large river system? Explain.

7 What is the *gulf stream?* Trace its course and state its effect.

8 Describe the drainage of New York state. Show the relation of this drainage to the prosperity of the state.

9 Give the cause of the blue color of the sky.

10 Describe the rainfall in the zone of the trades.

11 State the principal cause of a West India cyclone and trace its path.

12 Give the geographic distribution of glaciers.

13 Why is the winter temperature of Yakutsk, an inland town in Siberia, much colder than the winter temperature of the Faroe islands, though both are in the same latitude? Explain.

14 Mention 10 animals characteristic of South America.

15 Give arguments that tend to prove the unity of the human race.

High School Department

158TH EXAMINATION

PHYSICAL GEOGRAPHY

Thursday, March 30, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *aphelion*, *sirocco*, *cañon*, *crevasse*, *erosion.*

2 Describe the two principal motions of the earth. State the effect of each on the physical condition of the earth.

3 Mention the conditions necessary for an artesian well. Illustrate by a drawing.

4 Mention *two* physiographic features that you have observed in your vicinity and show the relation of each to some industry.

5 Compare the coast line of Europe with that of South America as to (*a*) relative length, (*b*) conditions favorable to commerce.

6 State the physical conditions necessary to the growth of coral islands.

7 What is meant by *mean annual rainfall?* How is this rainfall determined for a given place? What is the mean annual rainfall in the United States?

8 Describe the origin and progress of the tidal wave of the Pacific.

9 Why does more rain fall (*a*) on mountains than on plains, (*b*) on the coast than in the interior of a country?

10 Describe the predominant mountain system of Europe.

Or

Mention the ways in which swamps may originate.

11 Why is more dew deposited on verdure on a clear night than on a cloudy night?

12 Mention *four* principal elements that modify climate.

13 Mention *five* cereals and give the northern limit of the growth of each as determined by latitude

14 Give the chief physiographic reason for the location of *each* of the following cities. Cohoes, St Paul, Duluth, London, Lyons (France).

15 Give the chief characteristics of the Mongolian race. Mention *three* representative nations of this race.

Or

State how the northmen were influenced by surroundings.

High School Department

159TH EXAMINATION

PHYSICAL GEOGRAPHY

Tuesday, June 13, 1899 — 1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Give *five* proofs that the earth is spheric in shape.

2 Define *delta*, *asteroid*, *meteor*, *mirage*, *geyser*.

3 Mention *two* kinds of oceanic islands. Give an example of each.

4 State the cause of the tides. Explain.

5 Describe an experiment illustrating the formation of dew.

6 Mention the conditions specially favorable to delta formation.

7 Give illustrations that you have observed of the influence of weathering.

Or

Describe the predominant mountain system of South America.

8 Describe the effect of the rotation of the earth on the direction of the wind in the northern hemisphere.

9 Describe the appearance of a cirrus cloud.

10 Explain the formation of (*a*) land breezes, (*b*) sea breezes.

11 Give the cause of the violent storms that mark the course of the gulf stream across the Atlantic.

12 What causes render the climate of Sitka (Alaska) much warmer than that of Quebec, though the latter is farther south?

13 State the cause of the absence of rain in the deserts of Persia.

14 Mention *two* regions where rice is extensively grown and show why these regions are adapted to such growth.

15 Give the chief physiographic reason that helps to account for the growth of *each* of the following cities: Syracuse, Grand Rapids, Baltimore, Manchester (England), Havre.

High School Department

156TH EXAMINATION

BOTANY

Tuesday, September 27, 1898—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. State after your last answer the number of specimens that you have prepared for your herbarium. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *stamen*, *testa*, *bacteria*, *legume*, *panicle*.

2 Describe the process of germination of a monocotyledonous plant, using drawings to illustrate at least *two* stages of its early growth.

3 Describe the dandelion as to root, leaf, inflorescence and fruit. Use drawings to illustrate.

4 Describe the common pea as to root, stem, leaf and flower. Use drawings to illustrate.

5 Mention and diagram *five* kinds of leaves classified with reference to the shape of the apex.

6 Mention *two* principal kinds of compound leaves. Give an example and make a drawing of a leaf of each kind.

7 Classify fruits as to composition. Give an example of each class.

8 Describe the habitat and structure of (*a*) parasitic plants, (*b*) air plants. Give an example of each class.

9 State the functions of leaves and show how their structure adapts them to fulfil their functions.

10 Mention *four* species of plants having a natural defense against animals and state the nature of such defense.

11 Describe by aid of drawings *two* plant tissues that you have examined with a compound microscope.

12 Give the series, class, family and genus of each of *two* of the following: field-sorrel, white elm, red clover, sugar-maple, wheat.

13 Mention the fundamental characteristics that assign toadflax, foxglove and mullen to the same family.

14 Mention *two* plants included under *each* of the following orders: *Cruciferae*, *Caryophyllaceae*, *Ericaceae*, *Labiatae*, *Araceae*.

15 Give the geographic distribution of the cereals.

High School Department

157TH EXAMINATION

BOTANY

Tuesday, January 24, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. State after your last answer the number of specimens that you have prepared for your herbarium. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *estivation*, *anther*, *indigenous*, *caulicle*, *dehiscence.*

2 Describe the germination and early growth of the squash plant, using drawings to illustrate. State the conditions necessary for germination.

3 Compare the seedling of the pea with the seedling of wheat as to (*a*) number of cotyledons, (*b*) venation of foliage leaves, (*c*) form of leaves, (*d*) kind of root. Use drawings to illustrate.

4 Make a drawing of a winter twig of the horse-chestnut, showing (*a*) leaf-scars, (*b*) flower-bud scar, (*c*) buds.

5 Describe chickweed as to leaf, root, fruit and habitat, using drawings to illustrate.

6 Describe the wild carrot as to leaf, root, inflorescence and habitat, using drawings to illustrate.

7 Mention *three* modes in which leaves are inserted in the stem. Give the names of *three* plants illustrating respectively the three modes.

8 Describe root-movements.

9 Compare the leaf of the oak with the leaf of the maple as to (*a*) venation, (*b*) margin, (*c*) general shape.

10 State the function of the stamen. What are (*a*) ***monadelphous plants***, (*b*) *polyadelphous plants?*

11 Mention the characteristics of a complete flower. Draw a complete flower, designating each part.

12 Describe by aid of drawings *two* specimens of plant tissue that you have examined with a compound microscope.

13 Show how the structure of some plants renders their bark useful in the manufacture of textile fabrics. Mention *two* such plants.

14 Assign *each* of the following to its proper order: ***buttercup***, *yellow foxtail*, *horse-chestnut*, *white pine*, ***polygonum Pennsylvanicum.***

15 What is a *weed?* Mention *five* weeds.

High School Department

159TH EXAMINATION

BOTANY

Tuesday, June 13, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. State after your last answer the number of specimens that you have prepared for your herbarium. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define ***flora***, ***angiosperm***, ***fungus***, ***spore***, ***prothallium.***

2 Describe the germination and early growth of the pine. Use drawings to illustrate.

3 Compare the seedling of the bean with the seedling of indian corn as to (*a*) venation, (*b*) form of leaves. Use drawings to illustrate.

4 Make a drawing of an elm twig, showing arrangement of leaf-buds. What fraction indicates the arrangement?

5 Compare the leaf of the trillium with the leaf of the dandelion as to (*a*) venation, (*b*) margin, (*c*) general shape. Use drawings to illustrate.

6 Describe the parts of a complete pistil. When is a flower (*a*) monogynous, (*b*) polygynous?

7 Describe the strawberry plant as to (*a*) leaf, (*b*) flower. Use drawings to illustrate.

8 Describe field sorrel as to (*a*) leaf, (*b*) root. Use drawings to illustrate.

9 Describe the white violet as to (*a*) leaf, (*b*) flower. Use drawings to illustrate.

10 Mention *four* special forms of leaves and explain how the structure of each is adapted to its peculiar function.

11 Mention and describe *five* kinds of indehiscent dry fruits.

12 Mention and describe *five* kinds of buds.

13 Give the fundamental characteristics that assign the dandelion, the white daisy and the goldenrod to the same family.

14 Give the series, class and order of each of *two* of the following: *white willow*, *toad-flax*, *pea*, *couch-grass.*

15 Describe the internal structure of the stems of monocotyledonous plants.

High School Department

157TH EXAMINATION

ZOOLOGY

Wednesday, January 25, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *cilia*, *ectoderm*, *viviparous*, *function*, *hydroid*.

2 Describe the oyster as to mantle, gills, heart and adductor muscle. Make a drawing showing the position of each.

3 Compare the oyster with the mussel as to (*a*) method of life, (*b*) structure of shell, (*c*) internal structure.

4 Describe the external appearance of the common honeybee. Make drawings showing the comparative shapes of worker, drone and queen.

5 Describe by aid of a drawing the external appearance of the common perch. How is the structure of the backbone of a perch specially adapted to its mode of life?

6 What is meant by *alternate generation?* Illustrate from the life history of a medusa.

7 Compare the common beetle with the crayfish as to (*a*) circulation of blood, (*b*) digestive apparatus, (*c*) method of respiration.

8 Explain how the following are specially adapted by structure to perform their peculiar functions: fore limbs of bats, teeth of carnivora.

9 Describe by aid of drawings *two* specimens that you have examined with a compound microscope.

10 In what respects are the following remarkably adapted by structure to their respective modes of life: raptores, hymenoptera?

11 Trace the development of the circulatory system by describing its phases as manifested respectively in the starfish, grasshopper, snail, frog and bird.

12 Describe the internal structure of the lancelet. What characteristic of its structure renders it specially interesting?

13 Assign *each* of the following to its proper order: parrot, owl, toad, hedgehog, lynx.

14 Mention the points, as determined by increasing complexity of structure, that assign reptiles to a higher place in the scale of life than fishes; birds to a higher place than batrachians.

15 Give the chief economic use of *each* of the following: seal, pinna, nautilus, mussel, squid.

High School Department

159TH EXAMINATION

ZOOLOGY

Wednesday, June 14, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *cell*, *oviparous*, *cocoon*, *homology*, *crinoid*.

2 Describe the dragon-fly as to (*a*) structure, (*b*) habitat. Make a drawing of the dragon-fly.

3 Make a drawing of a ray of a starfish, showing (*a*) stomach, (*b*) intestine, (*c*) feet, (*d*) water-bags, (*e*) upper surface.

4 Describe the thoracic appendages of the crayfish.

5 Make a drawing of the common garden spider, showing (*a*) palpi, (*b*) mandibles, (*c*) spinnerets, (*d*) legs.

6 Describe the development of the frog.

7 Compare the following as to method of obtaining food: amoeba, polyp, starfish, sea-urchin.

8 Trace the development of the respiratory system by describing its phases as manifested respectively in the sponge, the sea-urchin, the earthworm, the clam and the bee.

9 Mention the points, as determined by increasing complexity of structure, that assign mollusks to a higher place in the scale of life than echinoderms.

10 Show that *each* of the following is well adapted by structure to its respective mode of life: whale, owl.

11 Explain how the following are specially adapted by structure to perform their peculiar functions: vertebrae of pythons, wings of petrels.

12 Describe by aid of drawings *two* specimens that you have examined with a compound microscope.

13 Give *two* examples of analogies between different animals.

14 Mention *five* kinds of animals abounding in your vicinity and assign each to its proper class and order.

15 Give the chief economic use of *each* of the following: alligator, earthworm, elephant, ostrich, kangaroo.

High School Department

156TH EXAMINATION

PHYSIOLOGY AND HYGIENE

Wednesday, September 28, 1898—1.15 to 4.15 p. m., only

Answer 10 questions but no more. *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *tendon*, *cell*, *antitoxin*, *oxidation*, *ptyalin*.

2 Mention *three* kinds of joints and give an example of each kind.

3 Describe the structure of the voluntary muscles. Give the name, location and function of each of *two* voluntary muscles.

4 Explain how the structure of the following organs admirably adapts them to perform their respective functions: lungs, skin.

5 Mention the properties of the cell. State the importance of the cell in the structure of the body.

6 Describe fully the digestion of a meal of baked macaroni and cheese.

7 Describe the lymphatic system and state its function.

8 Give a description (making use of a drawing) of any animal tissue that you have examined.

9 Describe the distribution and state the function of the seventh pair of cranial nerves.

10 Give *two* objections to the habit of breathing through the mouth.

11 State the effect of alcohol on the lungs; of tobacco on the heart.

12 Describe the structure and state the function of (*a*) the choroid, (*b*) the iris.

13 State the cause of inflammation.

14 Mention (*a*) the dangers arising from sewage, (*b*) *two* methods for the proper disposal of sewage.

15 Describe the structure of the internal ear.

High School Department

157TH EXAMINATION

PHYSIOLOGY AND HYGIENE

Friday, January 27, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *chyme*, *antidote*, *plasma*, *diastole*, *peptone*.

2 Describe the spinal column. Mention *two* features in its structure specially adapted to protect it from injury.

3 Mention the principal muscles of the arm and state how they are arranged.

4 Mention the *three* great classes of foods. Give an example of *one* food under each class.

5 Describe the *three* pairs of salivary glands respectively as to name, location and office.

6 Describe the process of the digestion, absorption and assimilation of a globule of fat.

7 State the effect of alcohol on (*a*) connective tissue, (*b*) nerve-tissue.

8 Make a drawing of the digestive system, indicating the relative positions of the following: stomach, large intestine, small intestine, liver, gall-bladder.

9 Mention *two* forces that aid in the circulation of the blood.

10 Describe the structure of veins. Mention *two* principal veins.

11 Describe the general anatomy of the lungs. Illustrate the description by a drawing.

12 Discuss reflex action in its relation to nutrition.

13 Make a drawing of a highly magnified cross-section of (*a*) a bone, (*b*) the skin.

14 What is meant by *short-sightedness?* Illustrate by a diagram the condition of a short-sighted eye.

15 How may hemorrhage be temporarily controlled? Give the treatment of a person who has fainted.

High School Department

158TH EXAMINATION

PHYSIOLOGY AND HYGIENE

Tuesday, March 28, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *trachea*, *cornea*, *pharynx*, *retina*, *labyrinth.*

2 Account for the smoothness and ease of motion of the joints.

3 Mention *four* functions of the skin.

4 Describe in detail the digestion of a meal of crackers and cheese.

5 State the necessity of a mixed diet.

6 Describe the esophagus, showing how its structure is adapted to perform its function.

7 State the difference between venous and arterial blood as to (*a*) color, (*b*) composition, (*c*) flow. Why is outdoor exercise necessary to healthful circulation?

8 Give the effect of the use of tobacco on (*a*) the lungs, (*b*) the brain.

9 Describe *two* ways in which food is absorbed from the alimentary canal.

10 Mention and describe the membranous coats of the brain.

11 State the effects of alcoholic drinks on each of the special senses.

12 Describe, making use of drawings, *two* specimens that you have examined with a compound microscope.

13 Describe the structure and state the function of the Eustachian tube.

14 Describe the spinal nerves as to (*a*) arrangement, (*b*) structure.

15 State *four* precautions that should be taken to preserve the sight unimpaired.

University of the State of New York

High School Department

159TH EXAMINATION

PHYSIOLOGY AND HYGIENE

Friday, June 16, 1899 — 1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *hygiene*, *marrow*, *bile*, *cerebrum*, *pepsin*.

2 Describe the physiologic process that takes place in the repair of a broken bone.

3 Mention *two* beneficial results of perspiration.

4 Describe the structure of the muscles of the heart.

5 State the beneficial and the injurious effects of (*a*) tea, (*b*) chocolate.

6 Describe the first set of teeth as to (*a*) number, (*b*) structure.

7 Describe the process of the digestion, absorption and assimilation of sugar.

8 State (*a*) the effect of alcohol on the heart, (*b*) the effect of tobacco on the throat.

9 What chemical changes does the blood undergo during circulation?

10 What is meant by the *pulse?* Give its cause.

11 Give (*a*) the composition of the blood, (*b*) the uses of the blood.

12 Describe the valves of the heart.

13 Describe the structure of the cerebellum.

14 Give the respective functions of the different parts of the ear.

15 Mention sanitary considerations that should be observed in selecting a site for a school-house.

Examination Department

159TH EXAMINATION

HOME SCIENCE

Friday, June 16, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Division of groups is not allowed. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1–2 Outline the course of instruction received in home science, giving the number of exercises in each subject and the length of each exercise. State whether the instruction has been by laboratory work or otherwise. Mention the books on home science (*a*) studied, (*b*) read.

3 State the number of calories which should be furnished by *one* day's work ration and indicate the proper amount to be derived from (*a*) proteids, (*b*) fats, (*c*) carbohydrates.

4 Select proper food articles for one day in winter for 10 high school pupils and place the quantity needed and the cost opposite each article selected.

5 Describe *three* essentially different methods by which fruits are prepared for storage and shipment to distant markets.

6 Describe the immediate treatment in case of poisoning by opiates. What is meant by the cumulative action of a poison?

7 Describe the immediate treatment of a person suffering collapse from injury.

8 For what purpose are blisters used? Give directions for the preparation, application and removal of a blister and the care to be given the patient after the removal of the blister.

9 Give careful detailed directions for making a bed from which the patient is not removed.

10 Give, with reasons, directions for the care of kerosene lamps. State precautions for lamps used only occasionally.

11 Give directions for the construction of a safe (in plumbing) and specify conditions under which it should be used.

12 Discuss the relative merits and cost of hot air, hot water, steam and a combination of hot air and hot water for heating an eight room two story villa dwelling.

13 Make a diagram showing a table set for the ***beginning*** of a breakfast consisting of sliced oranges, hominy and cream, bacon and fried eggs, baked potatoes, Graham gems, butter and chocolate, to be served for *three* persons.

14 Describe an ideal school room for 24 pupils, touching on size, heat and ventilation, light, seats and desks, blackboard, and situation relative to the points of the compass.

15 Describe a system for filtering the water for a city before introducing it into the mains.

High School Department

156TH EXAMINATION

GEOGRAPHY

Tuesday, September 27, 1898 — 1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Draw an outline map of New York state and trace thereon *two* main railway routes between New York and Buffalo.

2 On the map drawn in answer to question 1, show the location and names of *five* cities situated on *each* of the routes designated.

3 Mention *five* leading articles manufactured in New York state, giving the name of *one* city of the state notable for the manufacture of each article.

4 Mention the parallels of latitude and the meridians of longitude by which the United States is bounded.

5 State a point of interest concerning *each* of the following: (*a*) Chicago, (*b*) Duluth, (*c*) New Orleans, (*d*) Minneapolis, (*e*) Saratoga.

6 Mention in order, from east to west, the states bordering on the Gulf of Mexico. Mention the leading production of *each* of these states.

7 Describe *two* of the following: Yellowstone national park, Boston, Cuba, Connecticut river.

8 Account for the greatness of Pittsburg as a manufacturing center.

9 State in order the waters through which a steamer would pass in going from Duluth to Montreal.

10 Compare the Yukon river with the Mississippi river with reference to (*a*) length, (*b*) navigability, (*c*) volume of water carried to the sea.

11 Describe the Klondike region with reference to (*a*) climate, (*b*) mining.

12 Mention *five* leading agricultural productions of South America. What fact do these productions indicate with reference to climate?

13 Give the location of *each* of the following and state some other fact concerning each: Glasgow, Strait of Gibraltar, Venice, Philippine islands, Birmingham.

14 Write a description of *one* of the following, touching on (*a*) position on the earth, (*b*) climate, (*c*) principal city, (*d*) government, (*e*) leading exports: France, Russia, Mexico.

15 Compare Spain and Florida as to (*a*) size, (*b*) latitude, (*c*) surface, (*d*) climate, (*e*) inhabitants.

High School Department

157TH EXAMINATION

GEOGRAPHY

Tuesday, January 24, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 What is *latitude*, *longitude?* What use is made of latitude and longitude?

2 Do all places in the same latitude have the same climate? Give reasons. Mention illustrations in the United States.

3 Mention *one* European city noted for the manufacture and exportation of *each* of the following: glassware, fine porcelain, cutlery, silk, cotton cloth, lace, watches, linen goods, iron steamships, hardware.

4 Mention and describe a common railway route between Buffalo and Washington, and give the names and location of *three* cities on this route.

5 Arrange the following names of lakes in the order of elevation of surface: Onondaga, Cayuga, Seneca, Keuka, Champlain. On what facts is your judgment based?

6 Write a short description of *one* of the following: Howe's cave, salt in New York state, Au Sable chasm, Hudson river, Niagara falls.

7 Mention an important fact connected with *each* of the following places and give the location of each place: Valley Forge, Gibraltar, Mecca, Colorado Springs, Quebec.

8 Make an outline map showing the four principal West India islands and the peninsula of Florida. Give the name in each case.

9 Give the form of government of each of *five* of the following: Brazil, Italy, Japan, Denmark, Russia, Persia, Switzerland.

10 Mention *two* important articles that would be found in the cargo of a vessel sailing (*a*) from New York to Rio Janeiro, (*b*) from Rio Janeiro to New York.

11 Write a description of the Philippine islands, touching on (*a*) location, (*b*) climate, (*c*) productions, (*d*) principal city, (*e*) character of people.

12 Mention *four* colonies belonging to Great Britain; *two* colonies belonging to *each* of the following: France, Netherlands, Denmark.

13 Give the location of *each* of the following: Hindustan, Armenia, Congo river, Madagascar, Finland.

14 Mention in order the waters that would be traversed by a vessel in sailing from the Black sea to Canton, China.

15 Mention *three* races of men and give the name of *one* nation illustrating each race.

High School Department

158TH EXAMINATION

GEOGRAPHY

Tuesday, March 28, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Show by drawing or otherwise the meaning of *each* of the following: coast, cape, archipelago, delta, river system.

2 Mention *three* proofs of the rotundity of the earth; *two* causes of the change of seasons.

3 Write a description of some county in this state, giving the name of the county, and touching on (*a*) position in the state, (*b*) extent, (*c*) physical features, (*d*) chief industries, (*e*) name and location of county-seat.

4 Account for the location and growth of *each* of the following cities: St Louis, Tacoma, Buffalo, Savannah, Chicago.

5 Mention in order the bodies of water a vessel would traverse in going from Manila to New York by the shortest route.

6 Describe *two* important rivers of South America.

7 Give *five* instances in which a body of water or a mountain chain forms a part of the boundary between two European countries.

8 Mention *three* articles likely to be exported from London (England) to Sydney (Australia); *two* articles likely to be exported from Sydney (Australia) to London (England).

9 Mention and describe a common railway route between New York city and Montreal. Give the names and location of *three* cities or places of historic interest on this route.

10 Give the location in New York state of *five* of the following: an arsenal, a navy yard, a college for women, extensive salt-works, a state prison, a state normal school, a state reformatory.

11 Give *two* leading exports of *five* of the following: Japan, British India, Persia, Siberia, Sumatra, Java, Ceylon.

12 State a point of interest connected with *each* of the following European cities: Odessa, Florence, Havre, Madrid, Constantinople, Antwerp, Hamburg, Cracow, Christiania, Belfast.

13 Describe *two* of the following: Zambesi river, Atlas mountains, Albert Nyanza, Johannesburg.

14 Connect *each* of the following with the name of a state of the Union producing it in large quantities: gold, silver, copper, lead, coal, lumber, sugar, pork, cotton, tobacco.

15 Give the location of *each* of the following groups of islands: Canary, Channel, Aleutian, Falkland, Balearic. State *one* other fact concerning each group.

10 Give an account of the Northmen, and show their connection with the history of Russia, England and France.

11 What inventions and discoveries aided in producing the new era which began in the 15th century?

12 Give a brief account of *two* of the following: (*a*) the Polish uprising against Russia, (*b*) the Crimean war, (*c*) the unification of Italy.

13 For what is each of *five* of the following noted: Alaric, Belisarius, Bismarck, Charlemagne, Galileo, Loyola, Luther, Rienzi, Saladin, Zenobia?

THE 30 YEARS' WAR

14 Give an account of the following relating to the 30 years' war: (*a*) the real cause, (*b*) events that brought on the struggle, (*c*) the accession of a new emperor, (*d*) the protestant allies, (*e*) the policy of Richelieu.

15 State explicitly regarding the treaty of Westphalia, (*a*) *three* important provisions relating to the territorial boundaries of the empire, (*b*) *two* important provisions concerning religion.

University of the State of New York

High School Department

159TH EXAMINATION

GENERAL HISTORY

Friday, June 16, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted*

1 Give a brief account of the Aryans. Comment on the influence of the Aryan race in the world's civilization.

2 Mention *three* sources of historical information exclusive of written records. Show by an example the importance of *each* of these sources.

3 Describe *three* ways in which Egypt contributed to European civilization.

4 Compare in *two* important particulars the period of King Solomon with the Augustan and Periclean ages.

5 Show how on *two* different occasions before the Christian era contention regarding Sicily caused important political changes.

6 Give an account of *one* of the following: (*a*) the origin of slavery, (*b*) the influence of Christianity on slavery.

7 Show how the decay of Rome's political power affected the power of the church.

8 Describe the work of *one* of the following and show its influence on history: (*a*) Darius, (*b*) Justinian, (*c*) Charlemagne.

9 Trace the historical connection between Marco Polo's journeys and the discovery of America.

10 Show how the use of gunpowder in warfare helped to change the political system of Europe.

11 State the extent of Spain's colonial possessions at the beginning of the 17th century. Account for the decline of her power.

12 Show *one* important effect of the invention of printing on *each* of the following: (*a*) education, (*b*) religion, (*c*) politics.

13 State the influence of the 30 years' war on the social and political development of the German states.

REIGN OF LOUIS 14 OF FRANCE

14 Mention *three* important wars in which Louis 14 was engaged and describe the principal effects of each. Describe the progress in the art of war made in the reign of Louis 14.

15 Describe the domestic policy of Louis 14, touching on (*a*) encouragement given to literature, art and commerce, (*b*) treatment of the Huguenots and results of this treatment.

High School Department

157TH EXAMINATION

GREEK HISTORY

Tuesday, January 24, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Give the story of the Trojan war, touching on (*a*) cause, (*b*) principal leaders, (*c*) siege of Troy.

2 What was *Hellas?* What common bonds united all Greek communities? Explain.

3 Write on *two* of the following: (*a*) ostracism, (*b*) the Parthenon, (*c*) the Long walls.

4 Describe the education of the Spartans and show how it differed from the education of the Athenians.

5 Describe the economic reforms of Solon. Explain why these reforms were necessary.

6 Describe the government of *one* of the following at the time of the Persian wars: Athens, Sparta.

7 State the part taken in the Persian wars by *each* of the following: Themistocles, Aristides, Artemisia, Mardonius, Miltiades.

8 Describe the circumstances leading to the government of the Thirty tyrants.

9 Write on the Corinthian war, stating (*a*) cause, (*b*) *two* important battles, (*c*) terms of peace.

10 Show that many Greek cities were in reality separate and independent states. Explain how the history of Greece was affected by this condition.

11 Write on *two* of the following: (*a*) destruction of Thebes, (*b*) battle of Leuctra, (*c*) Olynthian confederacy.

12 Mention *one* important fact connected with each of *five* of the following: Pausanias, Apelles, Seleucus, Xenophon, Critias, Socrates, Pericles, Pelopidas, Cleon, Aristophanes.

GEOGRAPHY AND EARLY INHABITANTS OF GREECE

13 Draw a map of Greece, including the island of Euboea, and on it give the location, with name, of *each* of the following: (*a*) Pindus mountains, (*b*) Cambunian mountains, (*c*) Thermopylae, (*d*) Athens, (*e*) Corinth.

14 Describe the physical features of Greece and explain in detail their effect on the history of Greece.

15 Mention the *two* divisions of the Greek people that afterward became the leading races in Greece. Give the characteristics of each and mention the cities founded by them.

High School Department

159TH EXAMINATION

GREEK HISTORY

Tuesday, June 13, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Give the name and show by a map or otherwise the location of a Greek colony in (*a*) Asia, (*b*) Africa, (*c*) Gaul, (*d*) Italy, (*e*) Sicily.

2 Describe an event in Greek history connected with each of *two* of the following dates: 776, 490, 479, 431, 323, 146.

3 Give the location of Messenia. State the effect on the Messenians of (*a*) the 1st Messenian war, (*b*) the 2d Messenian war. Show the importance of these wars to the subsequent history of Sparta.

4 Show how Pisistratus became tyrant of Athens and how he used his power.

5 Explain the influence of the Delphic oracle in restoring the democracy to Athens.

6 Describe the means by which Themistocles forced the battle at Salamis. State the results of this battle.

7 Compare the Athenians and Spartans of the Periclean age as regards (*a*) government, (*b*) industries, (*c*) national power, (*d*) character.

8 Describe the *two* main features of the plan of Pericles for conducting the Peloponnesian war.

9 What conditions were imposed on Athens by Sparta and her allies at the close of the Peloponnesian war?

10 Show how the expedition of the 10,000 influenced subsequent events.

11 Mention *five* important effects of Alexander's conquests.

12 Justify by *three* illustrations the statement that the Greeks did well more different things than any other race.

LEGENDARY HISTORY OF GREECE

13 Give an account of (*a*) the journey of Theseus to Athens, (*b*) the slaying of the Minotaur. State the facts supposed to be the basis of these myths.

14 Give the tradition of the Dorian migration and state what historical fact it embodies.

15 Describe Greek life in the legendary or heroic age, touching on (*a*) government, (*b*) industry, (*c*) hospitality, (*d*) architecture, (*e*) position of woman.

High School Department

156TH EXAMINATION

ROMAN HISTORY

Wednesday, September 28, 1898—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Give an account of the leading race in Italy before the rise of Rome.

2 State the probable reason for the founding of Rome. Give a brief account of this event. What extent of territory was occupied by the city as first laid out?

3 Mention the *three* tribes that are supposed to have composed the early Roman state. Describe the *three* branches of the government at this time, executive, advisory and legislative.

4 Discuss the effects of the Roman religion on public affairs, giving illustrations from history. What ancient festival still survives at Rome?

5 Mention the grievances that caused the first secession to the Sacred hill. State in detail what was gained by this movement.

6 Give an account of the sack of Rome by the Gauls. How is our knowledge of Roman history affected by this event?

7 Give an account of the war with Pyrrhus, stating (*a*) cause, (*b*) Rome's reply to the peace proposals of Pyrrhus, (*c*) result of the war.

8 Describe the course pursued by Rome for holding her Italian conquests.

9 Mention *three* historic rivers of Italy (not including the Tiber), and describe an important event connected with *one* of them.

10 Give an account of Hannibal's invasion of Italy, showing (*a*) his plan of campaign, (*b*) the policy pursued by the Romans, (*c*) how the tide of success was turned.

11 Describe the principal reforms of the Gracchi and show to what extent they were successful.

12 Write biographic sketches of Marius and Sulla.

13 Give an account of the founding of the empire by Augustus, with a short character sketch of the first emperor.

14 Give an account of slavery in Rome and her possessions, showing (*a*) who were enslaved, (*b*) how slaves were treated, (*c*) effects on the Roman people.

15 Write biographic notes on *five* of the following: Livy, Germanicus, Aulus Plautius, Suetonius, Seneca, Vespasian, Zenobia, Diocletian, Constantine the Great.

High School Department

157TH EXAMINATION

ROMAN HISTORY

Monday, January 23, 1899 — 1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Draw a map of Italy and on it give the location, with name, of each of *five* of the following: (*a*) the Metaurus, (*b*) the Rubicon, (*c*) Rome, (*d*) Brundisium, (*e*) Capua, (*f*) Faesulae, (*g*) Tarentum, (*h*) Beneventum, (*i*) the Apennines.

2 What important political changes were made by Servius Tullius? Explain these changes in detail.

3 Describe the circumstances leading to the appointment of the decemvirs. State the most important result of their laws.

4 State the cause, mention *three* important battles and give the result of the second Punic war.

5 Mention *three* wars in which Marius took a prominent part. Give an account of his strife with Sulla.

6 'Hamilcar, Hannibal and Mithradates were the three great names that the Romans always pronounced with respect and dread.' Give facts to justify this quotation.

7 Mention *three* events connected with Caesar's conquest of Gaul and state *two* results of this conquest.

8 Give an account of the civil war between Caesar and Pompey, stating (*a*) cause, (*b*) course pursued by Caesar, (*c*) result.

9 Mention an important event connected with the reign of *each* of the following: Claudius, Nero, Vespasian, Trajan, Constantine the Great.

10 Write on *two* of the following: (*a*) the reign of Diocletian, (*b*) a Roman triumph, (*c*) contributions of Rome to modern civilization.

11 Write biographic notes on *five* of the following: Cincinnatus, Verres, Sertorius, Jugurtha, Crassus, Cicero, Attila.

12 State the duties of *three* of the following officers: questor, edile, pretor, consul, tribune, censor.

DEATH OF JULIUS CAESAR TO ESTABLISHMENT OF EMPIRE

13 Soon after the death of Caesar, Cicero said, 'The tyrant is dead but the tyranny still lives.' Describe the circumstances under which these words were uttered and explain their meaning,

14 Describe the circumstances leading to the battle of Philippi, and explain the importance of this battle.

15 Write a sketch of Octavius, covering (*a*) character, (*b*) policy after the death of Caesar, (*c*) relations with Antony.

High School Department

159TH EXAMINATION

ROMAN HISTORY

Monday, June 12, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Give the names of *four* races (not tribes) that inhabited Italy in early times. Indicate by a map or otherwise the boundaries of Latium.

2 Did Rome gain or lose power by the expulsion of her kings? State facts to sustain your answer.

3 What were the duties of the tribunes? Show how the tribunate came to be established and how Sulla limited its powers.

4 Describe the means by which Rome held conquered territory in Italy.

5 Give an account of the building of the first Roman navy and state what was accomplished by this navy.

6 State *one* important measure carried by Caius Gracchus and show its results.

7 Show how the free inhabitants of Italy obtained the Roman franchise.

8 Mention the number of Mithridatic wars and the names of the leaders in each. Give an account of *one* of these wars.

9 Explain the changes made by Sulla in the powers of (*a*) the senate, (*b*) the consuls and praetors.

10 Give *three* reasons for the overthrow of the Roman republic.

11 Give an account of the reign of Trajan, touching on (*a*) territorial policy, (*b*) travels, (*c*) buildings.

12 Describe, by drawings or otherwise, *two* of the following: (*a*) the Roman forum, (*b*) floor plan of a Roman house, (*c*) the colosseum, (*d*) the weapons of a Roman foot-soldier.

REIGN OF AUGUSTUS

13 Show by a map or otherwise the extent of territory governed by Augustus. Into what classes were the provinces divided and how was each class governed?

14 Explain how and why Augustus encouraged literature. Give the names of *three* celebrated authors of his reign.

15 Show (*a*) the means by which Augustus secured absolute power, (*b*) the effect of the absolutism of Augustus on the Roman empire. Mention the most important event that occurred during this reign.

High School Department

156TH EXAMINATION

ENGLISH HISTORY

Thursday, September 29, 1898 — 1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Give an account of the Britons at the time of the Roman conquest, as to (*a*) distinction between aborigines and Celts, (*b*) difference in civilization between the people of the south-eastern part of the island and those farther north, (*c*) religion.

2 State the duration and effects of the Roman occupation of Britain.

3 Who were the Jutes, Saxons and Angles? State the circumstances and the immediate and remote results of the coming of these tribes to Britain.

4 Describe the form of government established by the Teutonic conquerors of Britain.

5 Distinguish between Britain and England. Show how Christianity was introduced among (*a*) the Britons, (*b*) the Anglo-Saxons in England.

6 Show how England came to be ruled by a Danish king.

7 Give an account of the Norman conquest, showing (*a*) grounds on which William claimed the throne, (*b*) the main events of the decisive battle, (*c*) the policy of the conqueror.

8 Explain the circumstances under which the Plantagenets became rulers of England. Mention *two* important events in the reign of the first Plantagenet king.

9 Show the gains to English liberty during the reign of *each* of the following: John, Henry 3, Edward 1.

10 Mention *three* important events in the reign of Elizabeth, and sketch briefly the character of Elizabeth.

11 Mention the leading characteristic of the Stuart reign, sustaining your answer by a brief statement of historical facts.

12 State the circumstances under which William Pitt (afterward Lord Chatham) became actual head of the English ministry, and outline the services he rendered.

13 State the circumstances of the accession of William 3.

14 Give an account of *two* of the following: (*a*) the union of England and Scotland, (*b*) the fall of the Walpole ministry, (*c*) the battle of Waterloo, (*d*) the abolishing of 'rotten boroughs', (*e*) the effects on the English people of the American civil war.

15 Write short biographic notes on *five* of the following: Boadicea, Bede, 'Queen Maud,' the Black Prince, Sir Thomas More, Lady Jane Grey, Francis Bacon, Algernon Sidney, Clive.

High School Department

157TH EXAMINATION

ENGLISH HISTORY

Thursday, January 26, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Draw a map of England and Wales and on it delineate the rivers Mersey, Severn and Thames, and show the location of Deal and Manchester.

2 Sketch the history of Britain before the invasion of Caesar, mentioning the peoples by whom it had been visited, and stating what they saw and what commerce grew out of these visits.

3 State the consequences of the recall of the Roman legions from Britain. Select and describe the event which was the real beginning of English history, giving reasons for selection.

4 Describe the form of government introduced by the Jutes, Saxons and Angles.

5 Sketch the struggles of King Alfred with the Danes. Give an estimate of the character of Alfred.

6 What is the *magna charta?* Show how this charter was obtained, and give *three* of its important provisions.

7 Sketch briefly the relations between England and Scotland during the reign of (*a*) Edward 1, (*b*) Edward 2, (*c*) Henry 8.

8 Describe the chief event of Elizabeth's reign. Mention a statesman, a navigator and an author who were her subjects.

9 King James 1 of England has been called 'the wisest fool in Christendom.' Justify the statement by *three* incidents in his life.

10 Describe the invention and introduction of the steam engine, showing direct and remote effects on laborers' wages. What *two* cities and what political reform grew out of its introduction?

11 Trace the growth of representative government through *each* of the following periods: Plantagenet, Tudor, Stuart.

12 Mention *two* serious disputes between England and the United States at the time of the American civil war, and show how each was settled.

DEATH OF WILLIAM 1 TO ACCESSION OF HENRY 2

13 Mention the sons of William the Conqueror and the inheritance left to each at the Conqueror's death. Show the character of the immediate successor to the throne.

14 State *three* things that won for Henry 1 the favor of the English people. Give a summary of the leading events of the struggle for power that followed the death of Henry.

15 Describe the feudal system in England under the Norman kings.

High School Department

158TH EXAMINATION

ENGLISH HISTORY

Thursday, March 30, 1899 — 1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Draw a map of England and Wales, showing with name the location of (*a*) the Roman capital, (*b*) birthplace of Shakspere, (*c*) *three* important commercial cities.

2 Mention *three* invasions of the British isles prior to 1066 A. D. and state the principal results of each.

3 Show the importance of the work done by the monasteries.

4 State *three* important results of the Norman invasion. How did William 1 restrict the power of the nobles?

5 In what indirect way did the reign of Richard 1 advance the cause of popular government?

6 Mention the gains to England that came from (*a*) the 100 years' war, (*b*) the wars of the roses.

7 Explain *one* of the following: (*a*) 'I will make them conform or I will harry them out of the land,' (*b*) 'Paint me as I am!'

8 Describe the *two* principal causes of emigration in the Stuart period.

9 State the object of the reform bill of 1832, and show how the opposition to this bill in the house of lords was overcome.

10 What were the *corn laws?* What occurrence hastened their repeal? How did their repeal affect those engaged in (*a*) manufacturing, (*b*) farming?

11 State *three* ways in which the condition of the working classes has been improved within the present century.

12 Write biographic notes on *five* of the following: Charles George Gordon, Sir Rowland Hill, Charles Kingsley, Lord Nelson, Joseph Priestley, Sir Joshua Reynolds, Cecil Rhodes, George Stephenson, Dean Swift, Duke of Wellington.

REIGN OF HENRY 2

13 Show how *each* of the following acts of Henry 2 benefited the people of England: (*a*) destruction of baronial castles, (*b*) levy of scutage, (*c*) revival of the militia.

14 What barbarous methods of settling disputes were common in the reign of Henry 2? State (*a*) what courts were abolished by Henry 2, (*b*) what courts were restricted, (*c*) the measures taken to secure justice for all parts of England.

15 Write on the contest of Henry 2 with Becket, touching on (*a*) the two main points first disputed, (*b*) Becket's flight, return and murder, (*c*) the king's penance.

High School Department

159TH EXAMINATION

ENGLISH HISTORY

Thursday, June 15, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Draw a map of England and Wales and on it give the location with name of (*a*) the Cheviot hills, (*b*) Hadrian's wall, (*c*) Oxford, (*d*) Canterbury, (*e*) Watling street.

2 Give *three* reasons to account for the bodily vigor of the English people.

3 Why was the overthrow of druidism necessary to the conquest of Britain? What traces of druidism survive in modern life?

4 Explain the signification and the source of *three* of the following terminations of names of English towns: (*a*) -cester (caster), (*b*) -ton, (*c*) -by, (*d*) -sex, (*e*) -ham.

5 Mention *two* important powers of the witenagemot. Of whom was it composed?

6 Compare Saxons and Normans as to (*a*) military organization, (*b*) amusements, (*c*) mental characteristics.

7 Show how *each* of the following tried to restrict the power of the church: (*a*) Henry 1, (*b*) Henry 2. State results.

8 Mention *three* events in the reign of Richard 2 that may be considered signs of growing intelligence among the people.

9 Show briefly the relation of *each* of the following to the revolution of 1649: (*a*) Earl of Strafford, (*b*) Hampden, (*c*) Milton.

10 State under what circumstances the bill of rights was enacted and mention *three* of its important provisions.

11 Give with regard to the seven years' war (*a*) real cause, (*b*) *two* important results, (*c*) name of an English statesman and of an English general prominent at the time.

12 Show how the colonies are (*a*) an advantage to England, (*b*) a disadvantage. Give an outline of England's present colonial policy.

13 Write biographic notes on *five* of the following: Agricola, Thomas Arnold, John Bright, Caractacus, Thomas Carlyle, Sir Humphry Davy, Dunstan, Adam Smith, Sweyn.

REIGNS OF RICHARD I AND JOHN

14 Write a biographic sketch of Richard 1. Give an estimate of the value to England of Richard's reign.

15 Explain in detail (*a*) how Normandy was lost, (*b*) John's quarrel with the pope and its result.

High School Department

159TH EXAMINATION

FRENCH HISTORY

Wednesday, June 14, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more**. *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Draw a map of France before the Franco-Prussian war, and on it show the changes of boundary made in 1871.

2 Mention *three* ways in which the Roman conquest was beneficial to Gaul. Give reasons.

3 Describe the invasion of the Huns, touching on (*a*) appearance and number of the invaders, (*b*) their leader, (*c*) their previous success, (*d*) final battle, (*e*) result.

4 Mention *three* means by which Charlemagne sought to create a lasting empire. Why did his plans fail?

5 Show in regard to the first states-general (*a*) why it was summoned, (*b*) of whom it was composed, (*c*) importance of the third estate.

6 Describe the policy of the government toward the Huguenots in the reign of (*a*) Henry 4, (*b*) Louis 13, (*c*) Louis 14. What was the final result?

7 Contrast the reigns of Louis 14 and Louis 15. Show how each was a cause of the revolution of 1789.

8 Describe John Law's plan for (*a*) paying the debts of France, (*b*) obtaining credit. Show why his scheme failed.

9 Mention *two* ways in which the American revolution hastened the revolution of 1789. Explain.

10 Sketch the career of Napoleon 3, touching on the following points: (*a*) election as president, (*b*) methods of gaining popular favor, (*c*) treatment of political opponents, (*d*) downfall.

11 Give an account of *one* of the following: (*a*) the Dreyfus affair including trial and sentence of Dreyfus, evidence after trial, underlying reason for ill feeling aroused, (*b*) the Suez canal as to construction, operation, control and importance.

12 Write biographic notes on *five* of the following: Charles the Bold, Daguerre, Racine, Mazarin, Necker, Turenne, Voltaire.

FROM ACCESSION OF LOUIS THE FAT TO DEATH OF PHILIP AUGUSTUS

13 Explain fully the methods employed by Louis 6 to secure a stable government.

14 Write on the following topics: (*a*) territory gained for France by the marriage of Louis 7, (*b*) expedition of Louis 7 to the holy land and its consequences.

15 Show how Philip 2 (*a*) advanced the reforms of Louis 6, (*b*) strengthened the monarchial cause at Bouvines, (*c*) conferred lasting benefits on Paris.

High School Department

158TH EXAMINATION

UNITED STATES HISTORY

Thursday, March 30, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Give reasons for the expedition of Columbus, touching on (*a*) trade of Genoa and Venice with the east and its interruptions, (*b*) why he sailed west from Palos.

2 Describe the trials of the colony at Jamestown. State the qualities necessary to success as a pioneer.

3 Mention *three* colonies that welcomed settlers without regard to religious beliefs, and state the effect of this policy.

4 Write on *one* of the following topics: (*a*) Braddock's expedition and its results, (*b*) the capture of Quebec.

5 State *two* advantages possessed by (*a*) the colonists in the revolutionary war, (*b*) the British in the revolutionary war.

6 Write a biographic sketch of about 75 words on *one* of the following: Franklin, Washington, Hamilton.

7 State *two* causes of the war of 1812. In what portions of the United States was this war most severely felt?

8 Mention the names of *three* new states admitted during the administrations of Madison and Monroe, and state what new territory was acquired within the same period.

9 Describe the following causes leading to the civil war: (*a*) fugitive slave law, (*b*) Dred Scott decision, (*c*) complaints of the south, (*d*) complaints of the north, (*e*) the free-soil party.

10 Write on *one* of the following: (*a*) capture of New Orleans in 1862, (*b*) Lee's invasions of the north.

11 Give an account of *each* of the following: (*a*) the Atlantic cable, (*b*) how Hayes became president.

12 Write biographic notes on *five* of the following: James Otis, Patrick Henry, Samuel Adams, Robert Morris, Daniel Boone, Francis Marion, Miles Standish, Anthony Wayne.

ADMINISTRATIONS OF JOHN QUINCY ADAMS AND ANDREW JACKSON

13 What charge was made against Adams on account of the chief member of his cabinet? State the views of Adams regarding internal improvements.

14 Describe the tariff views held by Adams; by Jackson. What section of the country generally shared Jackson's tariff views? Explain.

15 What action was taken by South Carolina in regard to the tariff laws of 1828 and 1832? How did Jackson meet the action of South Carolina? Give reasons for his course.

High School Department

159TH EXAMINATION

UNITED STATES HISTORY

Thursday, June 15, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Show how the growth of the United States has been affected by the river systems and the great lakes.

2 Give the names of *two* famous American authors who have written about the indians. Describe indian warfare.

3 Give the name of a man connected with the settlement of each of *five* of the following: Plymouth, Quebec, Boston, Jamestown, Philadelphia, St Augustine, Georgia, Kentucky, Rhode Island.

4 Describe by drawing or otherwise *two* of the following: blockhouse, stockade, canoe.

5 Show why Franklin's plan for a union of the colonies (*a*) was proposed, (*b*) was not adopted.

6 Explain the stamp act of 1765. Show how it was received.

7 Mention *three* military operations in New England in 1775 and 1776, and give an account of *one* of them.

8 State *two* ways by which the continental congress obtained money to carry on the war.

9 Show by a map or otherwise the location and extent of the first *two* accessions to the territory of the United States.

10 Give the chief provision of the Kansas-Nebraska bill and state the results of the passage of this bill.

11 Show the importance of the capture of Vicksburg to the cause of the union.

12 Write a biographic sketch (about 75 words) of *one* of the following: Clay, Lincoln, Tilden.

ADMINISTRATIONS OF VAN BUREN, HARRISON AND TYLER

13 Give an account of the financial panic of 1837 and state *three* results of this panic.

14 Give an account of the rise of the antislavery party as to (*a*) leaders, (*b*) antislavery riots, (*c*) denial of the right of petition, (*d*) presidential nominations.

15 By whom and why was the annexation of Texas favored? Give an account of the political struggle caused by this question of annexation and state the results.

High School Department

159TH EXAMINATION

ADVANCED UNITED STATES HISTORY

Friday, June 16, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Show the effects of the geographic advantages of the Hudson river system over other river systems as a gateway for colonization and commerce.

2 'The best part of American colonization resulted from the foolish and insolent oppressions of Europe.' Justify this statement regarding an important settlement made in (*a*) New England, (*b*) the middle colonies, (*c*) the south.

3 Describe an imaginary journey from Boston to New York in colonial days, touching on (*a*) preparations for the journey, (*b*) modes of travel, (*c*) dangers, (*d*) difficulties, (*e*) discomforts.

4 Compare the colonists of Massachusetts with those of Virginia in regard to (*a*) religion, (*b*) general character and occupations, (*c*) forms of local government, (*d*) distribution of population, (*e*) educational advantages.

5 State how the delegates and the president of congress were chosen under the articles of confederation. Give *three* important reasons why a stable government under the articles of confederation was impossible.

6 Describe *three* important compromises made in the federal convention of 1787 and embodied in the constitution. Show why these compromises were necessary.

7 Give the approximate date of the passage of a tariff law framed expressly to protect home industries, and describe the industrial conditions that made such a law desirable.

8 Give an account of the admission of California, covering the following points: (*a*) occupation of California by the United States, (*b*) effects of the discovery of gold, (*c*) attitude of the settlers toward slavery, (*d*) attitude of the southern states.

9 Show by historical facts what traits of character were prominently revealed in the life of Ulysses S. Grant after his retirement from public office.

High School Department

159TH EXAMINATION

U. S. HISTORY READING COURSE 1

Period of discovery and colonization

Monday, June 12, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Sketch the career of Alonso de Ojeda.

2 Relate the history of the city of Isabella in Haiti.

3 Give in substance Irving's account of the efforts made by Columbus to obtain from the Spanish government the restoration of his property and honors.

4 State the connection of Isabella, the daughter of Don Pedro de Ávila, with the career of De Soto.

5 Narrate *two* incidents of De Soto's march to Ochile.

6 State the circumstances under which Émery de Caen reclaimed Quebec for France in 1632.

7 Contrast the character of Villegaignon with that of Champlain.

8 Connect each of *five* of the following with the history of New England: Adrian Block, Samoset, George Weymouth, Sir Henry Vane, Rev. Thomas Hooker, Sir Humphrey Gilbert, Samuel Gorton.

9 State the leading facts connected with the discovery of the White mountains.

10 Write on the life and adventures of Sir William Phips.

11 Show what was done by Father Picquet and Sir William Johnson respectively to obtain control of the Iroquois. Describe the effect in each case, and state the final result.

12 Account for the failure of the patriots to secure the coöperation of Canada in the revolutionary war.

13 Mention the terms of Burgoyne's surrender. Comment on the action of congress with regard to the captured British army.

14 Give an account of the services of George Rogers Clark during the revolutionary war.

15 Describe home interiors in early New England.

High School Department

159TH EXAMINATION

U. S. HISTORY READING COURSE 2

Period of the Union

Monday, June 12, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Give an account of the *Federalist*, touching on (*a*) origin and purpose, (*b*) contributors, (*c*) effect, (*d*) literary merits.

2 Outline (*a*) Hamilton's argument to show that a United States bank would create a strong national sentiment, (*b*) Hamilton's plan for conducting a United States bank.

3 Relate the circumstances connected with the court-martial of General William Hull.

4 State the connection of each of *five* of the following with the war of 1812: Zachary Taylor, John Christie, Jacob Jones, Green Clay, Isaac Chauncey, Zebulon M. Pike, James Wilkinson, Robert Ross.

5 Write on the relations of Clay with (*a*) Aaron Burr, (*b*) Josiah Quincy.

6 Describe Clay's alleged change of attitude toward the abolitionists. Comment on his action in this matter.

7 Compare the character of Clay with that of Andrew Jackson.

8 Sketch the history of the colony of St Louis of Texas.

9 Describe the events that connect Antonio Trujillo with the history of New Mexico.

10 Write on *one* of the following: (*a*) the case of Prudence Crandall, (*b*) the connection of Daniel O'Connell with the anti-slavery movement.

11 Show how Lincoln, at the outset of his administration, settled the question of supremacy between himself and Secretary Seward.

12 Give an account of Greeley's 'Prayer of 20,000,000 of people' and of Lincoln's letter of reply.

13 Relate an incident connected with the battle at Spottsylvania Court House.

14 Give an account of *one* of the following: X. Y. Z. mission, interstate commerce act.

15 Explain *five* of the following: loose construction, salary grab, whisky ring, mugwump, quids, returning-board, copperheads, spoils system.

High School Department

156TH EXAMINATION

NEW YORK STATE HISTORY

Thursday, September 29, 1898—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Give an account of early explorations in and about the territory that is now New York, and state what claims were founded on these explorations.

2 State the nationality, general character, principal occupations and mode of life of the early settlers of New Netherland.

3 Show how the English obtained possession of New Netherland. Why did the Dutch give it up?

4 Give an account of the Iroquois and show what influence they exercised in determining who should possess New York. Give reasons.

5 Under what circumstances did the people obtain a voice in the government under English rule? State the leading provisions of the first constitution.

6 State the circumstances under which Jacob Leisler became chief executive. Describe *two* important acts of his administration.

7 Give an account of the Zenger libel suit and show the importance of the result.

8 Give a summary of historical facts showing the attitude of the people of New York toward England, from the passage of the stamp act to the declaration of independence.

9 Sketch the history of Fort Ticonderoga.

10 Give an account of the making of the first state constitution, stating *two* of its provisions and mentioning approximate date.

11 Sketch the development of the trunk waterways of the state from the early improvement of navigation on the Mohawk to the completion of the Erie canal.

12 Describe the University of the State of New York, as to (*a*) purpose and approximate date of organization, (*b*) classes of institutions included, (*c*) academic and professional examinations.

13 Give an account of *two* of the following: (*a*) the Sons of liberty, (*b*) anti-rent rebellion, (*c*) patriot war.

14 Show the part taken by New York in the civil war.

15 Mention a statesman, a soldier, an author, a financier and an educator of New York who have become famous, and write a brief note on *each*.

High School Department

157TH EXAMINATION

NEW YORK STATE HISTORY

Wednesday, January 25, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Draw a map of the state and on this map trace the route of the Erie canal and of the waterway by which its commerce reaches the sea. Give the names and location of *five* leading commercial cities touched by this canal.

2 Explain why the Dutch succeeded and why the French failed in their first efforts to gain a foothold in the territory of New York.

3 Give an account of the 'five nations' with reference to (*a*) territory occupied by them, (*b*) extent of their conquests, (*c*) occupations and mode of life as compared with those of other indian tribes.

4 State (*a*) the privileges granted to the patroons by the Dutch West India company, (*b*) reasons for complaint of the Dutch settlers against the company's government.

5 Write on the administration of Peter Stuyvesant, touching on (*a*) political reforms, (*b*) trouble with the indians, (*c*) surrender of the colony. Mention *two* prominent traits of Stuyvesant's character.

6 What check did the colonial legislature place on the power of the governor? By what means did George 3 free Governor Dunmore from this check?

7 Give an account of (*a*) the liberty pole, (*b*) how the taxed tea was received in New York city.

8 Give an account of the circumstances connected with the siege of Fort Stanwix in 1777. Show how the result of this siege affected the campaign of Burgoyne.

9 State the attitude of New York in regard to declaring war against Great Britain in 1812. Mention *three* places in New York invaded by the British in this war, and state the result of each invasion.

10 Write on the University of the State of New York, as to (*a*) purpose of organization, (*b*) *five* important functions.

11 Mention *two* ways in which the power of the governor was increased by the constitution framed by the second constitutional convention.

12 Sketch briefly the history of the Tammany society from its organization to the present day.

13 Mention *two* authors, *two* editors, *two* educators, *two* philanthropists and *two* inventors prominently identified with the history of New York.

14 Write biographic notes on *five* of the following John Jacob Astor, DeWitt Clinton, George Clinton, Silas Wright, Archbishop Hughes, Alexander McComb, Robert R. Livingston.

15 Write on the growth of New York city from 1865 to 1895, touching on (*a*) population, (*b*) notable structures erected within the period, (*c*) rapid transit.

11 Give an account of the origin of each of *two* of the following: (*a*) Union university, (*b*) Hamilton college, (*c*) Cornell university, (*d*) the first state normal school.

12 State the important changes made by the constitution of 1895 regarding (*a*) the state legislature, (*b*) regents of the University, (*c*) classification of cities, (*d*) courts of oyer and terminer, (*e*) employment of convict labor.

13 Give the name of a noted author of New York state who has written about the traditions of colonial life; of one who has written about the indians. Mention *two* men of New York state whose inventions have greatly aided commerce. Give a brief account of these inventions.

14 Write on *two* of the following topics: (*a*) New York as a manufacturing state, (*b*) the transmission of electric power, (*c*) the growth and effects of electric railways.

15 Write biographic notes on *five* of the following: Adrian Block, Ezra Cornell, William Cosby, John Jay, Sir William Johnson, Peter Minuit, Richard Montgomery, John Paulding.

High School Department

158TH EXAMINATION

CIVICS

Wednesday, March 29, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *patent*, *treason*, *codicil*, *robbery*, *arson*.

2 Explain the importance of the caucus as a factor in a popular form of government.

3 Mention *one* duty of *each* of the following town officers: justice of the peace, assessor, collector, constable, inspector of election.

4 Give the length of term and the manner of compensation of *each* of the following: county judge, sheriff, county clerk, county treasurer, district attorney.

5 State the provision of the state constitution regarding the time of election of city officers in cities of the first and the second class. Give reason for this provision.

6 What is meant by *challenging a vote?* Mention *three* grounds on which a person's right to vote may be challenged.

7 What is the *veto power?* Explain the importance of the veto power in a republic.

8 Describe the appellate division of the supreme court of New York state, as to (*a*) jurisdiction, (*b*) number, manner of obtaining office, and length of term of members.

9 What are the principal duties of the state board of health?

10 Give the various steps in the process of enacting a law in New York state.

11 Explain why the power to levy taxes is necessary to government. What possible danger is there in this power?

12 State the number of members composing the present house of representatives. When may this number be increased? Mention *three* qualifications for membership in this body.

13 Why is the power to declare war vested in congress alone? What name is given to property captured in time of war? What disposition is made of such property?

14 Mention the executive departments of the national government and give the title of the officer at the head of each department.

15 Describe the manner of choosing the vice-president in case no person has a majority of all ballots cast by the electoral college.

High School Department

159TH EXAMINATION

CIVICS

Tuesday, June 13, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *democracy*, *veto*, *libel*, *contract*, *summons*.

2 Describe the development of the town in England. Account for the transference of the town to America.

3 Give the length of term, the manner of compensation and the principal duties of *each* of the following officers: justice of the peace, assessor, collector.

4 On what theory is government founded? State and explain the *two* principal functions of government in any sovereign state.

5 Define *city charter*. Mention *three* topics treated of in a city charter.

The following *five* questions refer to New York state:

6 State the mode of appointment, the length of term and the principal duties of the superintendent of public instruction.

7 What are the essential provisions of the constitution in regard to bribery of voters and bets on the result of an election?

8 Give the constitutional qualifications of a voter and show the importance of *two* of these qualifications.

9 Give *three* leading provisions of the compulsory education law. Why is such a law important in a republic?

10 State, with reference to an impeachment trial, (*a*) composition of the court, (*b*) vote required for conviction, (*c*) limits of punishment in case of conviction.

The following questions refer to the United States:

11 Describe the process of making and ratifying a treaty.

12 Distinguish between the character of the duties performed by a foreign minister and the character of the duties performed by a consul. In what way are these officers chosen?

13 What is a *bankrupt law?* Why is such a law desirable?

14 Give the provision of the constitution in regard to (*a*) privilege of the writ of habeas corpus, (*b*) bills for raising revenue, (*c*) the drawing of money from the treasury.

15 What is meant by *title of nobility?* Why does the constitution forbid congress to grant such a title?

High School Department

156TH EXAMINATION

ECONOMICS

Tuesday, September 27, 1898 — 1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Mention *five* conditions on which the producing power of man depends.

2 Does man consume immediately all that he produces? Give reasons for your answer.

3 Define *wages*, *interest*, *rent*, *profits*. Which one of these responds most quickly to change in industrial conditions? most slowly?

4 State the leading considerations likely to determine the number of men a capitalist is willing to employ. Under what conditions will he be likely to employ (*a*) more men, (*b*) fewer men?

5 State which of the following productions is subject to greater fluctuation in prices: wheat, apples. Explain.

6 Discuss the circumstances under which wage-workers will be most efficient.

7 Mention *three* methods recently proposed in the United States congress for increasing the revenues of the government. Comment favorably or unfavorably on *two* of these.

8 Why, in general experience, does real estate bear an undue proportion of the burden of taxation? Suggest a remedy.

9 Several men have worked together in digging a ditch. Should the pay be divided according to size of families, according to efforts, according to character or according to number of feet dug? Give reason for your answer.

10 Mention *two* of the most serious social problems in large cities. Suggest and discuss remedies for *one* of these.

11 Give arguments for or against a single gold standard.

12 Explain the usefulness of credit in (*a*) quickening exchange, (*b*) giving efficiency to industrial skill.

13 Explain why United States bonds, though bearing low rates of interest, sell readily.

14 State *three* effects of the division of labor which may be disadvantageous to workmen.

15 Do strikes benefit or injure workmen? Explain.

High School Department

157TH EXAMINATION

ECONOMICS

Tuesday, January 24, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Give *three* reasons for the rapid growth of the United States in material wealth.

2 State what is understood by *each* of the following terms: *raw material*, *finished product.*

3 Give economic arguments tending to show either that the United States will be benefited or that it will not be benefited by acquiring the territory of Puerto Rico.

4 Mention industrial benefits to the southern states growing out of the abolition of slavery.

5 State *three* advantages to workmen resulting from the division of labor.

6 State what is meant by *each* of the following terms: *strike*, *boycott*, *lockout*, *black-list*, *arbitration.*

7 State whether the manufacture of cotton fabrics or that of woolen fabrics is the more important industry in the United States. Explain your answer.

8 Distinguish between value and price. State a leading consideration likely to influence the price of potatoes, rubber boots, women's hats, strawberries.

9 In which way will a rich man benefit a community the more, by building a palace or a large factory? Give reasons for your answer.

10 Mention *three* ways in which the state contributes to the production of wealth.

11 Give *three* reasons why a large plow manufactory has the advantage over a small plant engaged in manufacturing the same article.

12 Distinguish between symbol money and real money. Illustrate by examples.

13 Explain why the United States bonds last issued, though bearing a low rate of interest, sold so readily.

14 Give *two* arguments for or against the single tax. Will these arguments apply with greater force to city lots or to farm lands? Why?

15 Explain the meaning of the term *socialism*,

High School Department

158TH EXAMINATION

ECONOMICS

Tuesday, March 28, 1899 — 1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 State *two* causes for the rapid concentration of population in large cities during the last half century.

2 Define *capital*, *wealth*, *rent*, *credit*, *value*.

3 Give *two* arguments for or against contract labor in prisons.

4 Explain why workmen are paid higher wages in the United States than in European countries.

5 What causes have led in recent years to the concentration of industry in large factories? How has such concentration affected the prices of commodities? Explain.

6 Distinguish between fixed and circulating capital. Give *three* examples of each.

7 Mention *three* considerations that influence the value of farm lands. Which of these is the most important? the least important? Give reasons.

8 What motives lead men (*a*) to exercise economy in the use of money, (*b*) to spend money freely for luxuries?

9 Mention *three* factors involved in the cost of producing an article. State *two* ways in which cost of production may be lessened.

10 In general, what relation does cost sustain to market value? Under what circumstances will a producer sell for less than cost?

11 What is a *monopoly?* Are monopolies as a rule harmful or beneficial to a country? Give reasons for your answer.

12 State *two* important functions of money. Give reason for the demand for increase in volume of circulating medium.

13 Explain why rents are higher in cities than in villages. Mention *three* causes for the variation in rent-charges for different houses in the same village.

14 Mention *three* leading forms of credit and state *two* ways in which credit may be abused.

15 Give *two* reasons for encouraging trade with foreign nations. In what ways may such trade be stimulated?

High School Department

159TH EXAMINATION

ECONOMICS

Tuesday, June 13, 1899—1.15 to 4.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 State the basis of man's right to property and mention a circumstance that limits that right.

2 Define *commodity*, *natural agent*, *labor*, *exchange*, *middleman.*

3 State in substance and explain the law of diminishing returns from land.

4 Show the interdependence of individuals and of nations for the necessaries and luxuries of life. What is the outcome of this interdependence?

5 State what is meant by (*a*) highest point of wages, (*b*) lowest point of wages.

6 Mention *three* disadvantages to workmen resulting from the division of labor.

7 State the law governing the relation of value to supply and demand. Illustrate in regard to (*a*) bread, (*b*) gold coin.

8 What conditions are essential to the success of a beet sugar manufactory?

9 State the ground of the right of government to levy taxes. Mention *four* purposes for which a state government may levy taxes.

10 Measured by purchasing power, is money in the United States more or less valuable than it was 20 years ago? Explain.

11 What is a *panic?* Under what business conditions are panics likely to occur?

12 What is a *national bank?* What security is provided for national bank notes? Mention *two* sources of profit to a bank.

13 Show the truth or falsity of the following: 'Justice requires that the owner of capital should be compensated for its use.'

14 Distinguish between cooperative manufacturing and profit-sharing. Which system is the more advantageous?

15 Five lumber firms, each employing 20 men, are merged in one; state advantages or disadvantages resulting to (*a*) the firms, (*b*) the community.

High School Department

157TH EXAMINATION

PSYCHOLOGY

Friday, January 27, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but no more. *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *five* of the following: *cognition*, *judgment*, *postulate*, *axiom*, *cause*, *environment*, *evolution*.

2 Trace the successive steps taken by the mind in coming to the following conclusion: This lesson is difficult.

3 Show the importance in practical life of the cultivation of *each* of the following: (*a*) attention, (*b*) memory, (*c*) imagination.

4 Mention and explain *three* theories to account for the relation between mind and body.

5 A person, when taking a walk, stops to look at a beautiful flower; give a psychologic analysis of this act.

6 Define *memory* and show how it differs from imagination. Mention, explain and illustrate *two* laws of association.

7 Give the psychologic elements involved in appreciation.

8 State the nature of attention. Show how attention is involved in (*a*) perception, (*b*) recollection.

9 Give a psychologic explanation of (*a*) hypnotism, (*b*) morbidness, (*c*) sympathy.

10 Distinguish between material phenomena and mental phenomena. Show which occurs in the form of time and which in the form of space. Explain.

11 Show how the physical element and the psychical element are involved in a sensation. Explain and illustrate the necessity of contrast in the production of a sensation.

12 Define *each* of the following and show its necessity in scientific investigation: *observation*, *experiment*, *theory*.

13 Explain and illustrate the origin of the idea of time.

14 Explain the difference between perception and conception. Illustrate each and show their interdependence.

15 Explain the psychologic basis of the following: 'I think, therefore I am.'

High School Department

159TH EXAMINATION

PSYCHOLOGY

Friday, June 16, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *five* of the following: *percept*, *adjustment*, *materialism*, *concrete*, *instinct*, *retention*, *discrimination*.

2 Show how cognition is involved in (*a*) repulsion for a criminal, (*b*) determination to give up a bad habit.

3 Explain, with illustration, the meaning of the following: 'Perception is that power which interprets the raw materials given by sensations.'

4 Explain in detail the formation of a concept. Illustrate.

5 Give a psychologic explanation of the following, showing the contrast between matter and mind: 'The universe may crush man with its power; but man is greater than the universe, because he is conscious that the universe is crushing him.'

6 Give a psychologic analysis of an act of attention.

7 Explain what is meant by *logical induction.* Show, with illustration, why ability to make logical inductions is important in practical life.

8 Mention, with explanation, the psychologic attributes of (*a*) a good talker, (*b*) a good listener.

9 A person while taking a walk thinks of a friend in a distant city; trace the process by which he arrives at this thought and state the law of association involved.

10 Give a psychologic explanation of an ill-balanced character. Illustrate.

11 Explain, with illustrations, the limitations of the imagination. Show how the imagination is involved in (*a*) sympathy, (*b*) choice.

12 A man, crossing the street, hears a horse coming and quickens his pace; trace the psychologic processes involved in this act.

13 Give, with explanation, the psychologic elements involved in reporting a conversation accurately.

14 Define *judgment.* Analyze psychologically in relation to judgment (*a*) belief, (*b*) doubt, (*c*) unbelief.

15 Write *two* premises from which the following conclusion may be drawn, and state the kind of reasoning involved: Study is beneficial.

High School Department

159TH EXAMINATION

ETHICS

Tuesday, June 13, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. As this is an examination in ethics all questions must be answered from an ethic standpoint. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *five* of the following: *conscience*, *virtue*, *duty*, *temperance*, *egoism*, *liberty*, *happiness*, *self-realization*.

2 Distinguish between a non-moral act and an immoral act. Illustrate each.

3 Mention and explain *two* theories of moral obligation.

4 Show the relation between (*a*) ethics and theology, (*b*) ethics and politics, (*c*) ethics and economics.

5 Outline your conception of a complete life.

6 Explain and illustrate what is meant by a *prudential action.* Show how a prudential action may become a moral action.

7 Show that untruthfulness is a violation of duty toward (*a*) self, (*b*) man, (*c*) God.

8 Give the ethic basis of the following: 'I find then a law, that, when I would do good, evil is present with me.'

9 Show that any normal act, such as walking, if carried to an extreme, becomes morally wrong.

10 Show the relation between character and conduct, touching on (*a*) environment, (*b*) habit.

11 Give an ethic analysis of (*a*) sudden resentment, (*b*) deliberate resentment. Show when deliberate resentment is justifiable.

12 Distinguish between self-love and benevolence. Show how both are necessary in the realization of the moral ideal.

13 Discuss, with illustrations, the influence of education on morality.

14 Discuss the following statement from an ethic standpoint: 'A man may do what he likes with his own.'

15 Write at least 100 words on *one* of the following topics: (*a*) Rights and duties of man in society, (*b*) The *summum bonum* of human life, (*c*) The moral obligation of a promise.

High School Department

156TH EXAMINATION

STENOGRAPHY

Thursday, September 29, 1898—9.15 a. m. to 12.15 p. m., only

NOTE—*Candidates may take one, two or all of these tests. The time for dictation and for transcription is indicated in each case. The shorthand notes and the transcript are to be collected by the examiner at the close of the period assigned for each transcript. Candidates are to specify the system followed in taking down the notes. Credits depend on the accuracy of the notes and of the transcription.*

FIRST TEST

Papers entitled to 75% will be accepted. 350 words to be dictated in 7 minutes and to be transcribed in 50 minutes.

MINUTES

H. Potz
Paris, France

Dear sir: I am delighted to hear that the French libra-
½ rians are to organize. I send you by this mail the * hand-
book of the American library association with its constitu-
tion and various other pamphlets bearing on library work
1 which may interest you. To follow our history * you must
consult the *Library journal*, *Library notes* and the annual
proceedings of the association. The little handbook, of
½ which I send you some extra * copies containing the con-
stitution, will give you the essential points in organization.
It will give me great pleasure to be of any possible as-
2 sistance to * you in organizing the proposed association.

Yours very truly
Martin Drew

John J. Jones, M. D.
New York

½ Dear Dr Jones: The medical law permits * us to indorse
the diplomas of students who were matriculated in a New
York medical school before June 5, 1890 and who received
3 the degree * from a medical school before August 1, 1895.
Under definition 5 is the statement that 'medical school'
means 'any medical school, college or department regis-
½ tered * by the regents as maintaining a proper medical
standard and as legally incorporated.' The institution re-
4 ferred to in your letter was not and is not * registered as
maintaining a proper medical standard. It will be neces-
sary, therefore, for the applicant in question to take the
licensing examination.

½ Very truly yours *

otherwise provided for, receive in them their education.
No desire to confine the new constitution to the narrowest
possible limits of space should prevent the adoption of an
enactment declaring in the strongest possible terms the interest
of the state in its common schools. Whatever may
2 have been their value heretofore, and language has been *
strained to the utmost in applying to them terms of praise,
their importance for the future can not be over-estimated.
The public problems confronting the rising generation will
demand accurate knowledge and the highest development
of reasoning power more than ever before, and in view of
the state's policy as to higher education, to which reference
½ will presently be made, too * much attention can not be
called to the fact that the highest leadership is impossible
without intelligent following, and that the foundation of
our educational system must be permanent, broad and firm,
if the superstructure is to be of real value.

The second section of our proposed article gives constitutional
recognition and permanence to the University of the
3 State of New York, leaving * its powers and duties, as heretofore,
entirely under the control of the legislature. We
believe that the adoption of this section is prayed for with
practical unanimity by the most competent educators of the
state, and that it will be a long step forward in the line of
educational progress. It is impossible, however, to discuss
½ the principles involved herein without regard * to the historical
policy of the state toward secondary and higher education,
for the reason that the section simply crystallizes
into a constitutional mandate the settled policy of the state
for over 100 years.

There are to-day two distinct coordinate systems of public
education in New York, occupying different fields, and
organized on different plans, working mostly without reference
4 to each other and * yet vitally connected—the University
of the State of New York, created in 1784, and the
Department of Public Instruction, created as a separate
office in 1854. Taken together they form a system without
theoretic unity, and with great, and for the most part unnecessary,
complexity. The practical effects of this state
½ of things have not manifested themselves as evil to the *
extent which might readily be supposed. New York is the
only American state having a separate department which is
devoted to the interests of higher education, and in which
all chartered institutions for secondary and higher instruction
in the state are embraced.

The people well know that only from the public schools
and academies can competent teachers for the common
5 schools be obtained. *

University of the State of New York

High School Department

157TH EXAMINATION

STENOGRAPHY

Thursday, January 26, 1899—9.15 a. m. to 12.15 p. m., only

NOTE—*Candidates may take one, two or all of these tests. The time for dictation and for transcription is indicated in each case. The shorthand notes and the transcript are to be collected by the examiner at the close of the period assigned for each transcript. Candidates are to specify the system followed in taking down the notes. Credits depend on the accuracy of the notes and of the transcription.*

FIRST TEST

Papers entitled to 75% will be accepted. 350 words to be dictated in 7 minutes and to be transcribed in 50 minutes.

MINUTES

President Board of education:
Dear sir:—Mr Smith tells me of his conversation with
½ you in regard to the academy. We have thought it over *
in the office and are all of one mind: unless you can get
1 not less than $100,000 of new endowment, we can see no *
hope of opening the school successfully. This is the experience
all over the country. All except a very few of the
½ very strongest academies must * give way to the tax-supported
high school. The appropriation made by a town no
larger than yours represents the interest on a large endowment,
2 and * it is beyond human possibility to compete successfully
with this. We are sorry, because of the history of
½ the old school, and if we could * see any possibility of a
continuance we should favor it, but we have to face the
3 facts and a condition and can not act from * sentiment.
Under the law it is required that when a school discontinues
its educational operations, it shall surrender its charter to
½ the regents subject to * return bearing the original date
whenever arrangements satisfactory to the regents are made
for opening the school again. You ought therefore to have
4 your charter * sent in to be deposited in this fireproof building
and to advise us what the trustees wish to do with the
½ property. The books and * apparatus are under the control
of the regents and it would be their natural course,
unless you suggested something more just, to give them,
5 as * far as they could be used to advantage, to your high
school, and I imagine that you would all prefer to use
½ the * property in your hands for building up that school
and making it as worthy in the 20th century of a leading
6 place among the high * schools which are the natural suc-

cessors of the academies, as was your academy among simi-
lar institutions in the century just closing. We feel that
½ it * would be more satisfactory to the trustees to have it
merged in a strong high school than to have it stand with
locked doors.

7 Very truly yours *

SECOND TEST

Papers entitled to 75% will be accepted. 500 words to be dictated in 5 minutes and to be transcribed in 55 minutes.

The present need of our high school system is sounder
scholarship. We are in need of instructors whose academic
knowledge is thorough. We have our share of able in-
structors whose scholarship is unimpeachable, but the state
is full of young people, college graduates at that, whose
½ work evinces an imperfect * grasp of subject-matter. In
foreign languages (I am speaking of instructors) there is a
failure to grasp the thought of the author and inability to
cope with the syntax. In algebra there is a failure to com-
prehend a deeper justification for processes than the mere
1 rules. In geometry the * critical point of the demonstra-
tion is slurred. In historical subjects a sense of historical
significance is wanting. In literature we have words, empty
echoes of thought, not the living voice of the author.

Nor are these faults to be attributed to dulness. A young
½ person whose misfortune it may have * been to experience
four years of slipshod instruction under incompetent in-
structors or to have pushed into college with still less prepa-
ration comes out of college four years later imperfectly
equipped to instruct high school students. Native ability
counts for more in the long run than any other factor, but
2 for * young instructors I find that the high school they may
have attended counts for more at first than the college from
which they have been graduated. Even a young instructor
who has had excellent training for college and who has fur-
½ ther attended a college or university of high standing finds *
the conscientious preparation of lessons in the usual five or
six daily subjects a heavy task by the side of which the
preparation of college lessons seems mere play. And then,
too, the instructor's preparation must come after his vitality
and best energy have been expended in conducting the
3 work of * the successive classes.

The young instructor whose subject knowledge is unsound simply can not prepare his work properly and conduct classes successfully. He is obliged to wait for success till

he has acquired both subject knowledge and experience.
In the meantime class work suffers as I have indicated.

½ The university summer school * is doing not a little to
remedy this state of affairs. I am of the opinion, however,
that some plan of cooperation between the different departments
of the university, whereby a school for secondary
instructors might be kept open during the entire year,
4 would be a great step forward. Few * of our college graduates
now teaching Latin, for instance, have read their authors
beyond the point to which they were themselves instructed
when secondary students. In all secondary subjects
it is safe to say that few instructors have given the
½ field the careful study necessary to mastery. If a high *
school student comes into contact even once a day with an
instructor who is master of the situation, his ideal of scholarship
is elevated. If I find even one of an instructor's
recitations carried on in a masterly way, I feel very charitable
5 toward any shortcomings noticeable in other exercises. *

THIRD TEST

Papers entitled to 75% will be accepted. 625 words to be dictated in 5 minutes and to be transcribed in 55 minutes.

The act in question contains 23 sections, and in order
properly to consider the questions presented by this appeal
the general scope and purpose of the act, as a whole, must
be kept in view. It provides for the election of a police
justice in the town, to be paid a salary of $300 a year, and
½ confers on him the * same jurisdiction in criminal cases
as that of justices of the peace of the town. It provides
that fees charged and received by him in criminal cases
shall be paid over to the supervisor and not applied to his
own use.

It then provides for the annual election of a police officer
1 at a fixed compensation, with power to serve all criminal *
processes, and requires him to serve all processes issued by
the police justice in criminal cases. It also provides that
costs and fees therefor chargeable by law shall not be retained
for his own use, but must be paid to the supervisor.

It appears, therefore, that this rural town, with a population
½ of 6000 people all told, and a territory 10 miles * in
length and three or four miles wide, was provided with adequate
machinery for administering the criminal law and
preserving the public peace. The legislature decided that
both economy and efficiency would be promoted by concentrating
the duties of examining magistrate and conservators
of the peace in this town in two persons, and relieving the
2 justices of the peace and constables from * all duties in

that regard. That it was not a wanton or arbitrary interference
with the local affairs of the town, appears from a
very significant affidavit by the supervisor of the town and
chairman of the board of supervisors of the county, which
is in the record and is not denied or questioned. The origin
½ and purpose of this legislation are there * clearly stated. It
is shown that the statute was passed at the request and
solicitation of a large majority of the people of the town,
not only for the purpose of better conserving the cause of
law and order, but of reducing the burden of taxation, by
putting an end to the ill-considered and ill-advised action
3 of justices of the peace and * constables in soliciting and
procuring tramps and vagrants to be arrested and committed
for maintenance to the county jail for the sole purpose
of enabling justices and constables to present bills for
services against town or county. It is shown that this practice
had become such a grievous abuse that on more than
one occasion the supreme court had instructed the grand
½ juries * to inquire into the same. Moreover, it is stated that
after the act became a law, and at a public meeting of the
voters of the town, a resolution was unanimously passed
thanking the senator and the assemblyman representing
the town in the legislature for aid in procuring the enactment
of the law. All this, however, counts for nothing,
4 unless the legislature had * power to pass the bill and to
enact the sections in question.

It appears that the justices of the peace and the constables,
like the silversmiths of Ephesus, were not satisfied
with the new law. As their business was damaged and the
opportunities for making money were reduced, they appealed
to the courts for protection, which thus far they
½ have received, since it * has virtually been held that, after
a justice of the peace or a constable has been once installed
in office, the lawmaking power of the state is powerless to
deprive him of the opportunity of earning fees from the
town or county by looking after tramps and vagrants, or of
acting occasionally in the early stages of other cases of a
5 criminal character. *

High School Department

158TH EXAMINATION

STENOGRAPHY

Thursday, March 30, 1899—9.15 a. m. to 12.15 p. m., only

NOTE—*Candidates may take one, two or all of these tests. The time for dictation and for transcription is indicated in each case. The shorthand notes and the transcript are to be collected by the examiner at the close of the period assigned for each transcript. Candidates are to specify the system followed in taking down the notes. Credits depend on the accuracy of the notes and of the transcription.*

FIRST TEST

Papers entitled to 75% will be accepted. 350 words to be dictated in 7 minutes and to be transcribed in 50 minutes.

MINUTES

William B. Carroll
President Board of education
Oswego, N. Y.

Dear sir: Your list of books was received December 22.
½ It is our custom in * such cases to make acknowledgment
when we have had time to revise the list, not a small task
1 if the work is properly done. We * can grant an allowance
from the academic fund for approved lists of books
½ and apparatus up to $500 in one year, so that you * are
quite within the maximum. Apportionments are made
monthly and as soon as a list is approved the school is notified
2 that it may spend * the money it holds, with a statement
as to the date when the duplicate amount from the
½ state may be expected. As regards your list, * we note
that later entries call for very low prices. We should
strongly advise care in the selection of editions, that is,
3 fewer books * but better editions. This is specially true of
many of the books given under biography. The line drawn
½ through certain books indicates that we can * not approve
them, and they should not be included in the formal application.

Very truly yours

Benjamin Gifford
Starboard, N. Y.

4 Dear sir: In looking over * your application for the admission
of the Starboard union school, I observe that it
½ seems to be in proper form and that apparently * the requirements
are fully met. The margin on equipment, however,
is so small that after an inspector has visited the school
5 it may be found necessary * for you to make some additions

to your library and apparatus. With the understanding
½ that in case he should find the value too small you will *
make the additions necessary to bring the value up to $200
6 in the one case and $100 in the other, I take pleasure * in
making arrangements for you to hold the January examination. Please find inclosed an order for question papers.
½ It will not, however, be possible for your * school to be admitted till the next meeting of the regents which may not
occur till some time in February.

7 Very truly yours *

SECOND TEST

Papers entitled to 75% will be accepted. 500 words to be dictated in 5 minutes and to be transcribed in 55 minutes.

There is a current notion that the law can create wealth, and that some political measure will bring a man prosperity unearned by sweat of brow. These are false hopes whose hollowness is apparent when men have once grasped the
½ simple truth that human affairs are subject to laws as *
changeless as those which regulate the world of matter. If our teachers will train the boys in the first principles of finance and political economy as thoroughly as they now drill them in arithmetic and grammar, the time will come when economic quackery will be less conspicuous than it
1 now * is in campaign platforms.

It is necessary that this work should be begun in the school. Life is, indeed, itself a school. Most men probably owe to experience the greater part of their knowledge and understanding. Unfortunately, however, life is not a school
½ in which the pupil has much choice * of studies. He can
not supply at will what his school education has omitted, and in fact is usually unaware of any omissions. For this reason, many men spend their lives in business, in banking, merchandising or manufacturing, without ever thinking
2 much about the real meaning of the operations which *
they direct. Their theories about money and credit, for instance, are more crude and various than the ideas of uneducated farmers about crops and fertilizers. They have never been taught to think about such things, and accept as truth the first ideas that their personal experience sug-
½ gests or renders plausible. * School education may not
give the boy much information, but it may at least indicate the lines along which correct thinking is possible. A young man who goes into banking without any knowledge of the nature of money and its relation to credit is not likely to
3 acquire this knowledge. The * requirement most essential

in his business is a knowledge of the character and financial prospects of his customers, and this he may get and yet remain in dense ignorance as to the nature of money and credit. The men who are to be the bankers of the next
½ generation ought * now in their education to be preparing themselves for the widest possible usefulness. A knowledge of the principles of economics and finance and of the history and theory of banking will make them better bankers and better citizens.

It is a favorable sign of the times that colleges and uni-
4 versities * have begun to recognize the country's need of men trained in the study of practical affairs, and are encouraging their students to make varied and thorough investigations of economic questions. It is to be hoped that the value and importance of studies of this kind will receive
½ greater and greater * emphasis in the future. Yet the number of young men who receive a college education is a very small percentage of the whole. If the people are to form habits of sound thought on the great economic questions of the day, their training must be begun in the public
5 schools. *

THIRD TEST

Papers entitled to 75% will be accepted. 625 words to be dictated in 5 minutes and to be transcribed in 55 minutes.

Conspicuous and predominant among the educational needs of the United States to-day is the need of extending our high school system.

Nearly all of our cities and towns and some of our larger villages already enjoy a very liberal development of this system and their youth are able to acquire an education that
½ fits them for the ordinary duties of life. Though many * of the so-called high schools fall below the proper standard, still our present high school education is a fairly comprehensive system, whose provisions are liberal, whose results are good and whose aims are distinctly high and important, because tending to elevate the standard of average intelligence and to advance our people along the lines of enterprise, culture and morality.

1 Up to the * present time this valuable provision for larger development has not been enjoyed by those whose lines are cast outside the centers, on the farms, in the forests, in the mines, or by those connected with various other industrial interests located of necessity where towns and cities are impossible. Our provisions for public education, primarily designed to be of equal benefit to all our youth,
½ are * to-day, because of the high school feature in the towns, tending to divide our citizens into those for whose training

High School Department

159TH EXAMINATION

STENOGRAPHY

Thursday, June 15, 1899—9.15 a. m. to 12.15 p. m., only

NOTE—*Candidates may take one, two or all of these tests. The time for dictation and for transcription is indicated in each case. The shorthand notes and the transcript are to be collected by the examiner at the close of the period assigned for each transcript. Candidates are to specify the system followed in taking down the notes. Credits depend on the accuracy of the notes and of the transcription.*

FIRST TEST

Papers entitled to 75% will be accepted. 350 words to be dictated in 7 minutes and to be transcribed in 50 minutes.

MINUTES

Dr B. J. Harding
Binghamton, N. Y.

Dear Dr Harding: In answer to your question it gives
½ me pleasure to send copies of the recent reports * of the
dental department.

In any attempt to raise the standard there will always be,
1 as you know, men who fear that too much has * been attempted.
This is specially the case when, as in dentistry,
there has for so long been practically no requirement in
½ point of preliminary education. * We hope that efforts to
defeat the objects of the law will fail, as they are surely
2 bound to do when leaders in the profession * entertain the
views you hold touching these matters. Every year we are
accustomed to see bills introduced either to exempt individuals
½ or to put off * generally the operation of a law to
some time in the future. Last year a number of special
3 bills were introduced but all were defeated. * This will
probably be the case this year.

In the hope that I shall see you at the time of the annual
½ meeting, believe me, * with kindest regards,
Very truly yours

Dear sir: Mr B has given me a very satisfactory account
4 of the time spent in your New York * house in looking
over the pictures for our proposed order. The difficulty is
½ that the subject is new and we can not tell without trial *
what kind of pictures will be called for by the schools.
We like your pictures and I think without doubt when we
5 find out * what we want we can make up the order. Mr B
checked the catalogue and prepared an order ready for sig-

½ nature but in looking it * over he was in doubt in many
cases about the selections. I think the only safe way will be
6 for us to make up a * line of samples, show them to the
schools, talk with the principals, find out what is preferred,
½ and then order perhaps 10 copies each of * the best pictures
rather than a greater variety. If you are willing to do this,
we will go on immediately with the experiment
7 Yours truly *

SECOND TEST

Papers entitled to 75% will be accepted. 500 words to be dictated in 5 minutes and to be transcribed in 55 minutes.

Last winter the assembly passed a bill for the protection
of this industry, but the senate refused to concur. The
failure in the senate to give the measure that proper consideration
which it deserved is to be regretted. It seems that
½ competition in a state prison bears heavily on the * industry,
and some relief is desired. In the first place, it is clear
to everybody that all this difficulty would have been avoided
had the senate concurred in the measure which was passed
by the assembly. The superintendent of state prisons is
1 bound by the existing law to keep the * convicts employed.
He can not escape that duty. He does not make the laws.
When he selects a certain trade for convicts, there must
necessarily be more or less competition which must arise in
that trade. Of course each trade naturally desires to protect
½ itself. The trades should be diversified * as much as
is consistent with making the prisons reasonably self-supporting.
The superintendent is all the time between two
fires—the taxpayers on the one hand, who insist that the
prisons shall be self-supporting, and the workingmen on the
other hand, who object to any competition whatever. He
2 should pursue * a conservative course. This I am sure he
intends to do.

I am opposed to a restoration of the contract labor system
in the state prisons. I do not wish to see repeated here the
scenes and difficulties which are being experienced in Tennessee
½ to-day. It is safe to say * that the old contract system
will not be revived. The people insist, however, that
the prisoners should not be kept in idleness. That fact
has been demonstrated over and over again, and it is both
foolish and unwise not to recognize it. In the absence of further
3 legislation, the superintendent * of state prisons should
exercise a sound discrimination. He should protect outside
labor as much as possible, and at the same time keep the convicts
employed and prevent undue loss to the taxpayers.

In conclusion, permit me to say that whatever I can legitimately
½ and consistently do to influence that result * will
be done, not simply because you request it, but because it is
right and because it accords with the sentiments which I
have long entertained. I have no power in the premises.
I can simply suggest and advise. The superintendent of
4 state prisons is supreme in his department, * as is the head
of any other state department. The governor has no power
to issue an order, or to give any direction in the premises.
He can exert his influence but that is all. I will refer to
the superintendent both the papers and the arguments which
½ you have presented, * and will request him to consider the
subject again and to take such action in the premises as
he may consider just and proper, for the purpose of making
a satisfactory adjustment of the matter as far as he may be
5 able under existing laws. *

THIRD TEST

Papers entitled to 75% will be accepted. 625 words to be dictated in 5 minutes and to be transcribed in 55 minutes.

The decision of this case turns on the question of the
admissibility of evidence obtained from articles previously
published in the New York morning papers. These articles
mentioned the plaintiff as the guilty party. In the defendant's
publication relating to the same subject, he was described
as 'the London head of a New York firm of cloth
½ jobbers'. Was this evidence admissible * to show that the
plaintiff was the person referred to in the defendant's article,
and would it be so understood by persons reading it?
The defendant's publication was in the evening of the day
on which the articles in the papers mentioned were published,
and it is obvious that it referred to the same subject.
The managing editor of the defendant's paper testified
1 * that he read the article before it was published. He
also testified that in that article the defendant referred to
whatever cables, or articles purporting to be cables, appeared
in the morning papers admitted in evidence. His testimony
also shows that he had read the papers containing this account,
that he knew to whom it referred, and with that knowledge,
½ published the article * in question. Thus, this testimony
disclosed the actual circumstances under which the
libel was published. It showed that the person who was instrumental
in the defendant's publication knew and intended
that it should refer to the plaintiff, and that there had been
a publication of the transaction by other papers which was
2 such that any person having read them would at once *
know to whom the article published by the defendant ap-

plied. It seems to be well settled that where a libel does
not name the plaintiff he may give evidence of all the surrounding
circumstances and of any extraneous facts which
will explain and point out the person to whom the allusion
applies. That rule is established by the adjudicated cases and
½ by the text writers * as well. Hence, the important question
is whether evidence of the publication by the morning papers
of articles relating to the same subject was a circumstance
which was admissible to show that the publication by the
defendant was intended to apply to the plaintiff, and would
be so understood by a reading public. That the defendant's
3 articles would produce that * effect, and would produce the
same injury as if the plaintiff had been named by the defendant,
as in the previous publication, is manifest. The evidence
of the defendant's managing editor shows that the
basis of the defendant's publication was the articles which
were introduced in evidence. To determine the effect of
the defendant's article and its application, it would seem
½ proper * to show the condition of the public mind, the
information the public possessed on the subject of the article,
and the consequent inference which would readily
be drawn from reading it. As bearing on that subject,
the plaintiff was permitted to show that at least three
public newspapers, which had a large and general circulation
4 in the same city, had previously and on * the morning
of the same day published an account of the supposed
transaction in which they mentioned the plaintiff as the person
who was guilty of the act alleged. After the details of
this transaction had been made public, and the name of the
plaintiff given, the defendant, with a knowledge of those publications
½ and with a knowledge of the fact * that the plaintiff
had been identified as the guilty person, with a view of communicating
such information to the reader, published the
article. Under these circumstances, it seems to me that
proof of the condition of the public mind and the means of
information the public had were admissible as attendant
circumstances to indicate that the defendant's article referred
5 to the plaintiff. *

University of the State of New York

High School Department

156TH EXAMINATION

BOOKKEEPING

Wednesday, September 28, 1898—1.15 to 4.15 p. m., **only**

Answer questions 2–3, 4, 7, 8 and five of the others but **no more.** *If more than five of the others are answered only the first five answers will be considered. Division of groups is not allowed. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Define *entry*, *account*, *indorsement*, *ledger*, *stocks.*

2–3 From the following data make a statement or a balance sheet showing in detail resources and liabilities, the gains and losses and the present worth of the business:

	Dr.	*Cr.*
Proprietor	......	$8000
Cash	$12560	9240
Merchandise	18927	16295
Bills payable	2500	2800
Bills receivable	900	400
Shipment to Boston (goods all sold)	650	875
Wheat	4200	4000
Johnson & Stokes	2119	246
A. B. Wilson	180	180

Inventory shows on hand general merchandise worth $8427 and 1000 bushels of wheat worth 75 cents a bushel.

Journalize for double entry the transactions in questions 4, 5 and 6.

4 Aug. 1, 1898. Began business with cash $3000, merchandise $1200 and owing a promissory note for $250, made June 1 for three months with interest at 6%. Paid for insuring stock of goods $18. Cash sales this day $68.75.

5 Aug. 3. Engaged Robert Stevens as clerk at $10 a week and advanced him $5 on his first week's wages. Sold for cash merchandise $37.84. Sold James Wickens on account merchandise $34.50. Sold Wilbur Thomas on his note at 30 days $275.

6 Aug. 8. Sold Samuel Granger merchandise $42 and took in payment 50 bushels potatoes at 60 cents, balance on account. Bought of William Morse one market wagon for $40; paid him by sight draft on James Wickens $34.50, balance in cash. Sep. 1. Wilbur Thomas having failed I have accepted 50% of the face value of note made by him Aug. 3 in full payment of same. Paid with interest my note of June 1 mentioned in question 4.

7 Write the cash book for the transactions given in questions 4, 5 and 6. What is the balance of cash now on hand?

8 Post and close the merchandise account for transactions given in questions 4, 5 and 6. Assume that merchandise on hand is worth $871.91.

9 Write (*a*) the promissory note mentioned in question 4, making John Doe payee, (*b*) the draft on James Wickens mentioned in question 6.

10 You hold a promissory note payable to your order which you wish to transfer without becoming responsible for its payment. Write the proper indorsement. Mention and illustrate *two* other kinds of indorsements.

11 Write in proper form a bill of at least three items sold, on which there has been a partial payment in cash previous to this date. Assume that the bill is settled and receipted to-day.

12 A promissory note for $650 is made Sep. 1, 1897, interest at 5%. Payments have been made as follows: Jan. 2, 1898, $10; Feb. 1, 1898, $35; July 1, 1898, $125. How much is due at settlement Sep. 1, 1898?

13–14 *Dr.* JOHN ALDEN *Cr.*

1898			1898		
Jan. 18	To mdse....	$250 00	Feb. 11	By cash.....	$188 50
Mar. 6	"	85 19	Apr. 27	"	90 31
May 30	"	323 81	June 15	By mdse....	170 00

Find the average time for the payment of the above account. If the account is settled to-day, with interest at 6%, how much should be paid?

15 Write a letter applying to Watson & Wait for a position as bookkeeper, stating the facts that should be given in such a letter.

High School Department

157TH EXAMINATION

BOOKKEEPING

Wednesday, January 25, 1899—1.15 to 4.15 p. m., only

Answer the first five questions and five of the others but **no more.** *If more than five of the others are answered only the first five answers will be considered. Division of groups is not allowed. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1–2 F. M. Barker invests $3000 and Edward Everts $2000 in a partnership business, gains and losses to be shared in proportion to investment. At the end of one year the ledger shows the following footings:

	Dr.	*Cr.*
F. M. Barker	......	$3000
Edward Everts	......	2000
Cash	$15000	12000
Merchandise	22000	21570
Bills payable	2500	2500
Bills receivable	4000	2500
Expense	1420	
Jones Brothers	1580	3580
Wheeler & Adams	650	

The inventory shows merchandise on hand worth $5800. Prepare a balance-sheet showing the loss or gain and the net capital of each partner.

3 Describe the process of closing a double entry ledger. Close the merchandise account of the ledger mentioned in questions 1–2.

Journalize the transactions in questions 4, 5, 6, 7.

4 Jan. 2, 1899. F. W. Eaton invests cash $4000 and J. C. Hill cash $3000, in a partnership business. Jan. 3. Bought of Samuel Hadley merchandise amounting to $5000 and gave in payment cash $3000, and our note at 90 days, without interest, to balance.

5 Jan. 4. Sold merchandise amounting to $500 and received in payment 50 barrels flour at $6, the balance in cash. Sold for cash 40 barrels flour at $6.50.

6 Jan. 6. Bought of James Rogers on account at 60 days merchandise amounting to $500. Paid our note of Jan. 3 in favor of Samuel Hadley, less 1½% discount allowed for immediate payment.

7 Jan. 9. Paid bill of James Rogers for merchandise bought Jan. 6, less 2% discount allowed. Sold J. S. Black on account 10 barrels flour at $6.25.

8 Give a general rule for journalizing (determining debits and credits). Show how this rule applies to the journalizing of transactions involving (*a*) bills receivable, (*b*) bills payable.

9 Write the note referred to in the transaction of Jan. 3.

10 You owe Jacob Astor $100 and William Wild owes you $100. Write a sight draft to balance these accounts.

11–12 Jan. 2. Received from T. Farmer 300 bushels potatoes, 500 bushels wheat, 1000 bushels oats, to be sold on commission. Paid freight $43, cartage $9, insurance $10, storage $10. Sold as follows: Jan. 3, 200 bushels potatoes at 50 cents, 500 bushels wheat at 65 cents. Jan. 9, 100 bushels potatoes at 52 cents, 1000 bushels oats at 30 cents. Commission 2%. Make an account sales.

13 On a promissory note for $1200, dated Jan. 3, 1898 and bearing 5% interest, the following payments have been made: Feb. 15, $50, Aug. 1, $15, Oct. 1, $250. How much was due Jan. 3, 1899?

14 Enter in a cash-book from which postings are made direct to the double entry ledger the cash transactions mentioned in questions 5 and 7.

15 Define *bill of exchange*, *bill of lading*, *power of attorney*, *bill*, *receipt*.

University of the State of New York

High School Department

158TH EXAMINATION

BOOKKEEPING

Wednesday, March 29, 1899—1.15 to 4.15 p. m., only

Answer the first five questions and five of the others but **no more.** *If more than five of the others are answered only the first five answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1–2 In a certain ledger the footings of the accounts which show resources and liabilities are as follows:

	Dr.	*Cr.*
Cash	$8536 63	$2138 17
Bills receivable	3650 00	2400 00
Merchandise (inventory)	....	7968 33
Personal accounts	840 80	3474 41
Bills payable	500 00	850 00

The original investment was $10,000. Find the present worth and the net gain or loss.

3 What is the purpose of an expense account? What items appear on its debit side? What items may appear on its credit side? Give examples to illustrate each.

4 Enter in a cash-book from which postings are made direct to the double entry ledger, the following transactions: Feb. 18, 1899. Sold merchandise to A. Hoadley for cash $118.25; paid my note in favor of D. Way $100, and interest $1.25; paid C. B. Astor for merchandise $216.30; T. Allen paid his account due May 18 $110, less discount at 6%.

Journalize the transactions in questions 5, 6 and 7.

5 Feb. 15, 1899. Began business with cash $5000, merchandise $2000, store $4000. Bought furniture and fixtures for cash $500.

6 Feb. 18. Sold merchandise to James Roberts on account $55, to John Harris for cash $60, to W. D. Morris on his note at 30 days without interest $100, to H. P. Smith in exchange for 50 bushels potatoes at 40 cents $20.

7 Feb. 20. Received of James Roberts his draft at 10 days sight on Roger Williams for $55 to settle account. W. D. Morris has paid his note of Feb. 18, being allowed 10% dis-

count on the same. Bought of Horn and Howard on our note at 30 days without interest merchandise amounting to $500.

8 Write the draft referred to in question 7 and give the journal entry relating to it on the books of James Roberts.

9 Write (*a*) the note referred to in question 6, (*b*) the note referred to in question 7.

10 Make in due form a bill of merchandise sold by you containing at least four items. Assume that the bill has been paid and write the receipt.

11 Post the merchandise account for the transactions mentioned in 5, 6 and 7. Close the account, assuming merchandise on hand to be worth $2450.

12 What is the object of keeping a bill-book? Rule a portion of a page of such a book and enter in it the note mentioned in question 6.

13 To what extent does a trial balance show the correctness of a ledger? Mention a kind of error that will not be shown by a trial balance.

14 A and B, partners in a business, admit C as an equal partner on his investment of $5000. State what changes should be made in the books.

15 What is an *original entry?* When should it be made? What should it show? Why is an original entry specially important?

High School Department

159TH EXAMINATION

BOOKKEEPING

Wednesday, June 14, 1899—1.15 to 4.15 p. m., only

Answer the first five questions and five of the others but **no more.** *If more than five of the others are answered only the first five answers will be considered. Division of groups is not allowed. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1-2 From the following ledger footings and inventory make a balance sheet showing the resources and liabilities, and the proprietor's present worth and net gain or loss:

	Dr.	*Cr.*
Proprietor	....	$4000
Cash	$8450	5850
Merchandise	9500	8000
Bills payable	500	1000
James Green	....	2500
Bills receivable	2000	500
Expense	350	100
William Jay	1200	200
Lewis Hayne	150	

Merchandise per inventory $2500.

3 Enter in a cash-book (folio form) from which postings are made direct to the double entry ledger, the cash transactions mentioned in questions 4, 5 and 6.

Journalize the following for double entry:

4 March 14, 1899. Bought merchandise of Robert Grant $5000, giving in payment my note at 60 days for $2000, cash $1000, balance on account. March 15. Sold J. Candee merchandise amounting to $800 and received in payment cash $400, balance on account.

5 March 16. Sold Robert Grant merchandise amounting to $300 and took in payment 400 bushels wheat at 75 cents. Sold merchandise for cash $125. March 17. Bought of James Fitch 300 bushels corn at 40 cents, giving in payment sight draft on J. Candee.

6 March 18. Sold Robert Grant merchandise amounting to $2500, and received in payment my note of March 14, less discount of 1%, balance in cash. Paid for clerk hire $30, coal $20.

7 Post and close the merchandise account of transactions given in questions 4, 5 and 6. Assume merchandise on hand at close worth $3500.

8 Write a letter to Fish & Wilson, making application for a position as bookkeeper. State your qualifications for the place and give references.

9 Write the note mentioned in the transaction of March 14. Assuming that the note does not bear interest and that money is worth 6% per annum, find the true present worth of the note when given.

10 Write the draft mentioned in the transaction of March 17, and its acceptance by the drawee, payable at Troy National bank.

11–12 A farmer having 10 acres of land worth $50 an acre plants with potatoes. It costs $50 to prepare the ground for planting, $100 for seed potatoes, $55 for fertilizer, $25 for planting, $80 for cultivating and harvesting the crop. The average yield per acre is 198 bushels and the crop is sold at 55 cents a bushel. Assume that interest on value of land is 6% and that taxes amount to $8.50. Write in proper form an account with this field, showing results.

13 A trial balance may be made either by taking the total footings of all the ledger accounts or by taking the balances of accounts only. Which is the better method and why?

14 Copy in a column and add the following: $428.32, $1396.47, $62583.21, $100.50, $10100.25, $63485.75, $952.31, $2.35, $0.75, $82.73, $5.18, $12634.43, $865.75, $562.40, $798.97, $21423.50, $121.60, $12.40, $34483.48.

15 Define *inventory*, *invoice*, *shipment*, *consignment*, *account*.

High School Department

156TH EXAMINATION

DRAWING

Thursday, September 29, 1898 — 1.15 to 4.15 p. m., only

Answer 10 questions but **no more,** *including one from each of the three divisions. If more than 10 are answered only the first 10 answers will be considered. Division of groups is not allowed. Credits allowed each answer depend on (a) knowledge of principles, (b) execution. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted. At close of examination inclose work in double sheet, and place declaration and signature on last page of double sheet.*

PICTORIAL DRAWINGS — FREE HAND AND INSTRUMENTAL

1–2 Draw in light and shade the picture of a simple farmhouse having a wing at right angles to the main building. Finish with background.

3 Draw an oblong 3″ by 5″. Within this oblong draw a picture illustrating the principle that distance affects the apparent size of an object [Suggested elements: sail-boats, water, elevation of land in the distance and in the foreground].

4–5 Sketch the top of a circular center-table. Draw drapery. On the table arrange a vase and a tray one of which is rectangular and one ovoidal in shape. Finish with background.

DECORATIVE DRAWINGS — FREE HAND AND INSTRUMENTAL

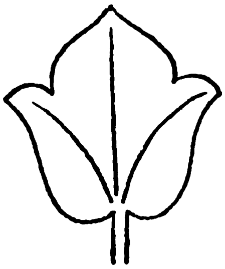
Tracing and transferring allowed

6 In what *three* ways may a unit of design be repeated? Sketch lightly an illustration of the three ways.

7 Draw a right line fret.

8 Conventionalize the leaf, bud and flower of any plant. Write the name of the plant.

9–10 Use the following conventionalized leaf as a unit in a rosette. Combine with this in the rosette an original alternating form:



GEOMETRIC AND WORKING DRAWINGS—INSTRUMENTAL

Show all working lines

11–12 Draw plan and elevation of the house referred to in questions 1–2.

13 Construct a triangle two of whose angles are 45° and 60° respectively.

14 Draw the developed surface of a cone, the diameter of whose base is 2″ and the altitude 3″.

15 Construct a quatrefoil based on an oblong.

High School Department

157TH EXAMINATION

DRAWING

Friday, January 27, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more,** *including one from each of the three divisions. If more than 10 are answered only the first 10 answers will be considered. Division of groups is not allowed. Drawings may be in pencil, charcoal, pen and ink or water-colors. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted. At close of examination inclose work in double sheet, and place declaration and signature on last page of double sheet.*

PICTORIAL

1 Make a free hand sketch of some object near you. Finish with background.

2 Make a sketch of a view seen through a doorway or window, showing a house, trees, and hills in the background.

3 Draw free hand, in light and shade, a group consisting of a cylinder and a cube. [These models may be placed before candidates if teacher desires.]

4 Copy free hand fig. 1.

5 Draw with instruments a horizontal square, 3′ edge, at an oblique angle to the picture plane and 1′ to the right of the line of direction. [Assume that eye level is 5′ above ground-line, observer 10′ from picture plane, scale ½″ to 1′.]

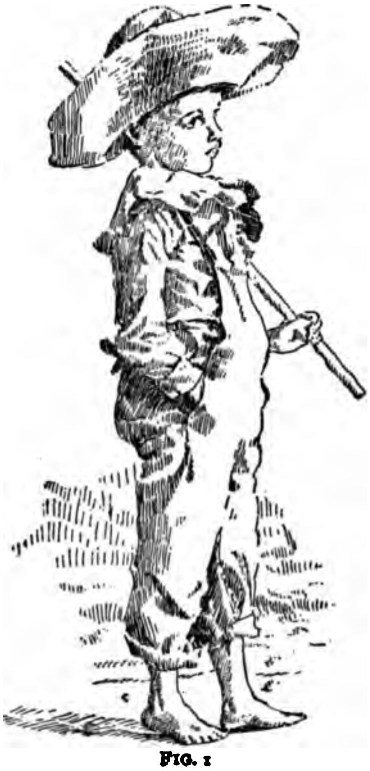


FIG. 1

DECORATIVE—FREE HAND AND INSTRUMENTAL

Tracing and transferring allowed

6 Draw an oblong 3″ high and 2″ wide. Within this oblong draw a suitable decorative design, using some plant form as a motive.

7 Draw a flower-pot containing a palm or some other plant form. [Answer may be in silhouette.]

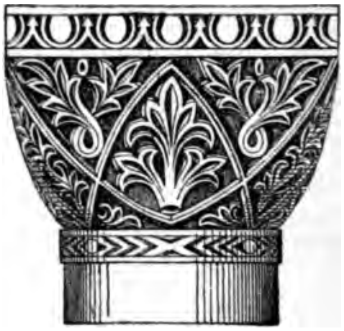


FIG. 2

8 Make a design for a notebook cover in which the motive is either a flower or an historic ornament.

9–10 Copy the central figure from the decoration of the Byzantine capital (fig. 2), doubling linear dimensions.

GEOMETRIC — INSTRUMENTAL

Show all working lines

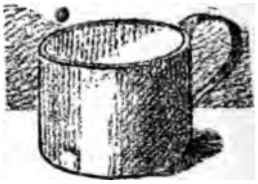


FIG. 3

11 Draw plan and elevation of fig. 3.

12 Draw the developed surface of a truncated square pyramid, side of lower base 1½", of upper base 1", altitude 1'.

13 Draw plan and elevation of the truncated square pyramid mentioned in question 12.

14 Construct a circumference through *three* given points.

15 Construct an octagon, each of whose sides is 1".

High School Department

158TH EXAMINATION

DRAWING

Tuesday, March 28, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more,** *including one from each of the three divisions. If more than 10 are answered only the first 10 answers will be considered. Division of groups is not allowed. Drawings may be in pencil, charcoal, pen and ink or water-colors. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted. At close of examination inclose work in double sheet, and place declaration and signature on last page of double sheet.*

PICTORIAL

1 Make a sketch of a hat lying on a desk and finish with background. [Object may be in sight of candidate if teacher desires.]

2 Copy free hand the following group (fig. 1), enlarging slightly:

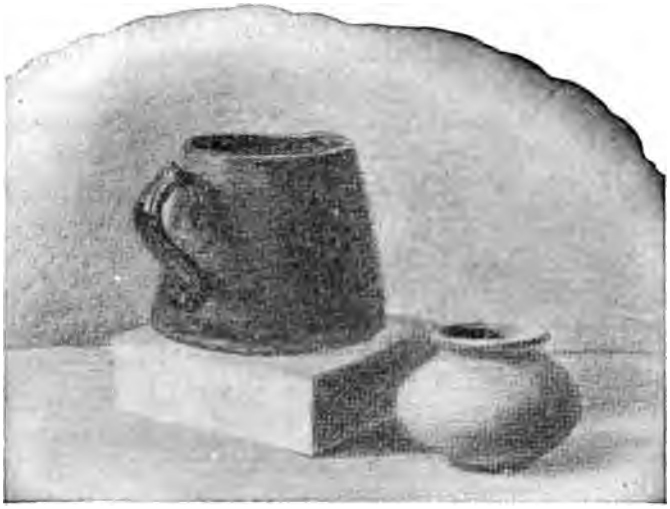


FIG. 1

3–4 Within a circle not more than three inches in diameter, draw a landscape. Though any elements may be used the following are suggested: A farm-house, a road and trees.

5 Draw a vase. Finish in light and shade.

DECORATIVE — FREE HAND AND INSTRUMENTAL

Tracing and transferring allowed

6 Draw a vertical oblong in the proportion of two to one. Within this oblong sketch a group of cat-tails and leaves, suitably arranged to fill the space [Any other plant forms may be used if preferred].

7–8 Conventionalize a plant form and arrange the units for a surface design similar to fig. 2. Make the linear dimensions of the oblong twice the size of those of the copy, with units of corresponding size.

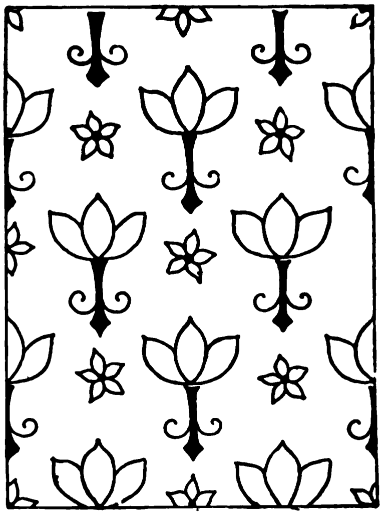


FIG. 2

9 Draw an ornamental initial B.

10 Illustrate one style of historic ornament. Write name of style underneath.

GEOMETRIC — INSTRUMENTAL

Show all working lines

11 Draw plan and elevation of a cylinder, diameter of base $1\frac{1}{4}''$, altitude $2''$.

12 Draw the developed surface of the frustum of a cone.

13 In fig. 3 *a* is the plan of a square pyramid, and *b* is the plan of a square prism. Copy fig. 3 and make the elevations necessary to complete the working drawings:

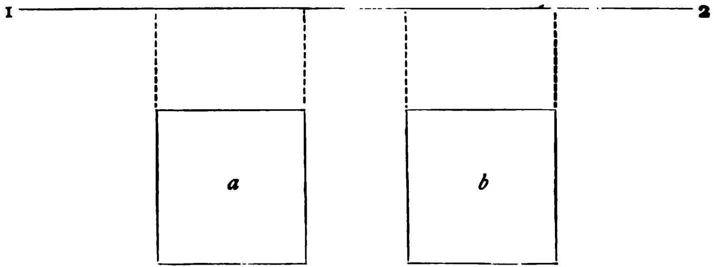


FIG. 3

14 Divide a line four inches long into five equal parts. Leave all construction lines.

15 Construct a regular hexagon. On each side of the hexagon as a base construct a semi-circle. Leave all construction lines.

High School Department

159TH EXAMINATION

DRAWING

Friday, June 16, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more,** *including one from each of the three divisions. If more than 10 are answered only the first 10 answers will be considered. Division of groups is not allowed. Drawings may be in pencil, charcoal, pen and ink or water-colors. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted. At close of examination inclose work in double sheet, and place declaration and signature on last page of double sheet.*

PICTORIAL

1 Draw with instruments in perspective a rectilinear solid turned at an angle of 45°. [Make use of a diagram.]

2 Make a free hand sketch of some object that you have seen. Finish with background.

3 Copy free hand fig. 1.

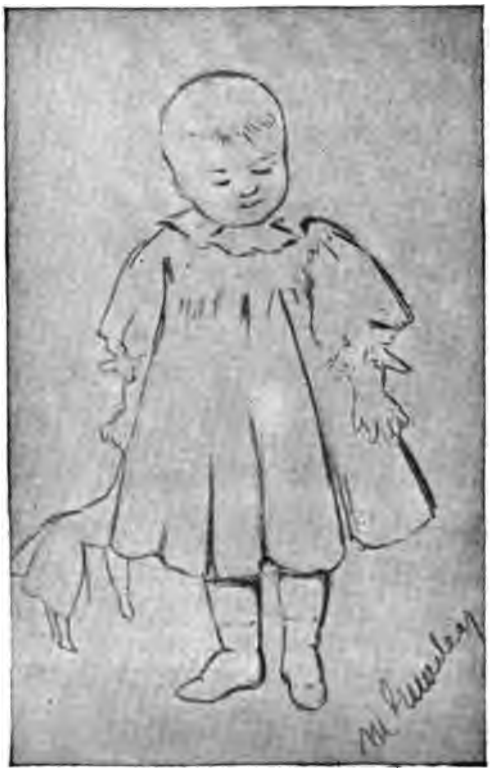


FIG. 1

4–5 Arrange the following elements in an oblong so as to make a pleasing picture [Other elements may be used if preferred]: road leading toward a distant forest, trees in the foreground.

DECORATIVE—FREE HAND AND INSTRUMENTAL

Tracing and transferring allowed

6–7 Copy the ornamental paper-knife (fig. 2), enlarging slightly.

8–9 Conventionalize an ivy-leaf. Use conventionalized form to make a design suitable for the top or side of a box.

10 Draw an example of the Egyptian style of historic ornament.

GEOMETRIC—INSTRUMENTAL

Show all working lines

11–12 Draw plan and elevation of a vertical cylinder supporting a square plinth.

13 Draw a regular pentagon.

14 Draw the developed surface of a cone, the diameter of the base being $1\frac{1}{2}''$ and the altitude $2\frac{1}{2}''$.

15 Construct a trefoil.

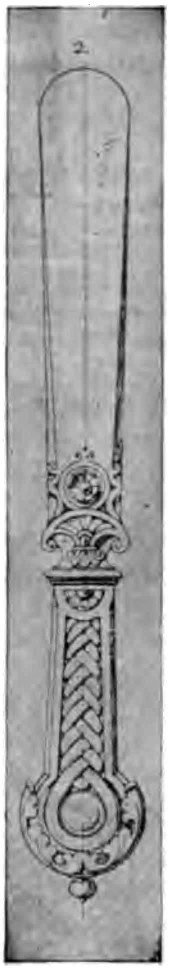


FIG. 2

High School Department

157TH EXAMINATION

ADVANCED DRAWING

Monday, January 23, 1899—9.15 a. m. to 12.15 p. m., only

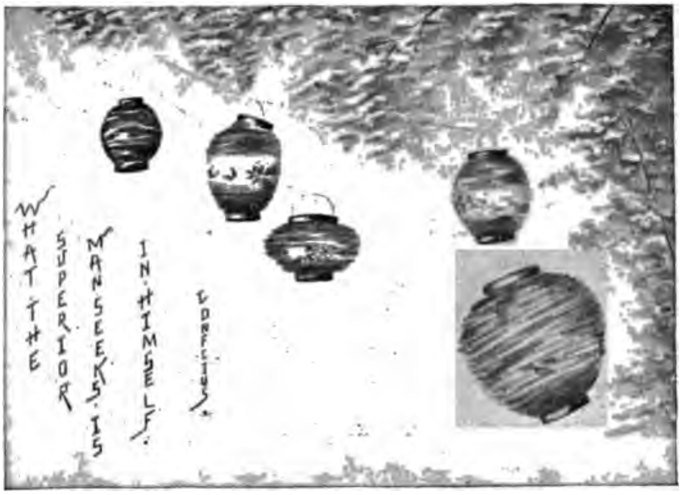
Answer 10 questions but **no more,** *including one from each of the three divisions. If more than 10 are answered only the first 10 answers will be considered. Division of groups is not allowed. Drawings may be in pencil, charcoal, pen and ink or water-colors. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted. At close of examination inclose work in double sheet, and place declaration and signature on last page of double sheet.*

PICTORIAL

1 Make a free hand sketch of the side view or back view of some person near you. Add surrounding details at pleasure.

2 Within an oblong 3" by 5", draw free hand a picture containing the following: hills in the distance, water, trees and sail-boat.

3 Copy the following, enlarging slightly:



4 Make a suggestive sketch suitable to accompany the following:

With deep affection
And recollection
I often think of
Those Shandon bells,
Whose sounds so wild would
In the days of childhood,
Fling round my cradle
Their magic spells.

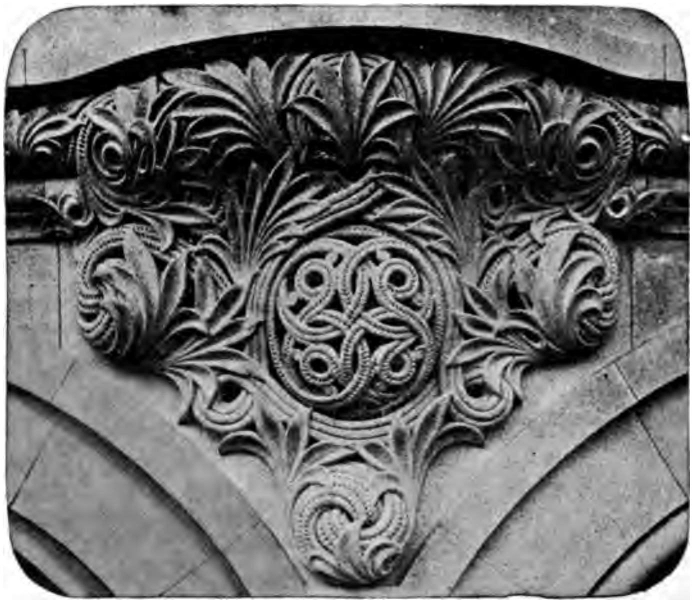
5 Draw free hand in light and shade a group consisting of a salver, a pitcher and three tumblers. [These objects may be in sight of candidates if teacher desires.]

DECORATIVE—FREE HAND AND INSTRUMENTAL

Tracing and transferring allowed

6–7 Ornament a picture-frame, using as the motive a spray of flowers, either natural or conventionalized.

8–9 Copy a part or the whole of the following ornament from the grand western stairway in the capitol at Albany:



10 Design a decorative initial letter.

GEOMETRIC—INSTRUMENTAL

Show all working lines

11–12 A cylinder, 2″ in diameter, is cut by a plane at an angle of 45° to its axis. Draw real shape of section.

13–14 Draw plan, elevation and convex developed surface of a truncated cone.

15 Within a scalene triangle inscribe a circle. Circumscribe a circle about the same triangle.

University of the State of New York

High School Department

159TH EXAMINATION

ADVANCED DRAWING

Monday, June 12, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but **no more,** *including one from each of the three divisions. If more than 10 are answered only the first 10 answers will be considered. Division of groups is not allowed. Drawings may be in pencil, charcoal, pen and ink or water-colors. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted. At close of examination inclose work in double sheet, and place declaration and signature on last page of double sheet.*

PICTORIAL

1 Make a sketch of your hand as it lies on the desk before you.

2 Copy free hand fig. 1, enlarging slightly.

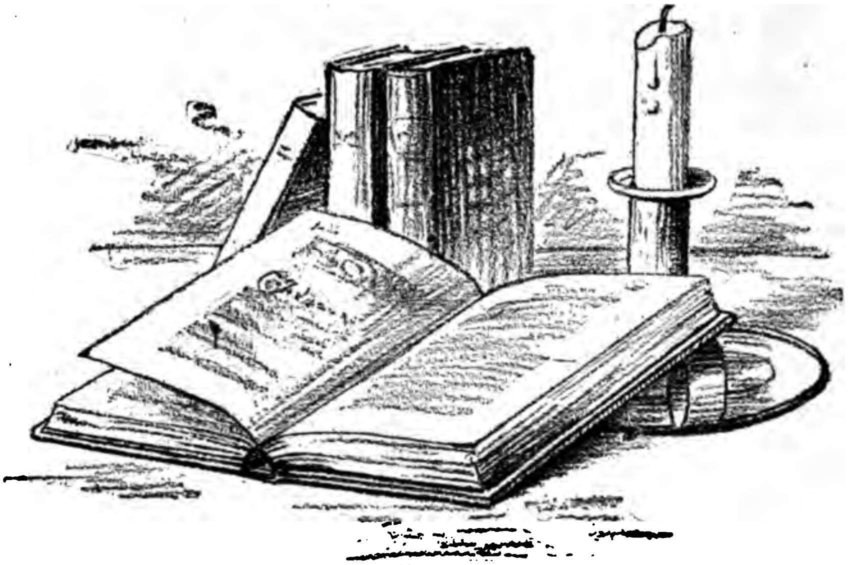


FIG. 1

3–4 In an oblong in the proportion of one to two, draw free hand a picture containing the following elements: a rail fence, a field, hills, clumps of trees [Other elements may be used].

5 Make a suggestive sketch to accompany the following:

> And the night shall be filled with music,
> And the cares, that infest the day,
> Shall fold their tents, like the Arabs,
> And as silently steal away.

DECORATIVE—FREE HAND AND INSTRUMENTAL

Tracing and transferring allowed

6–7 Copy at least one half of fig. 2, enlarging slightly.

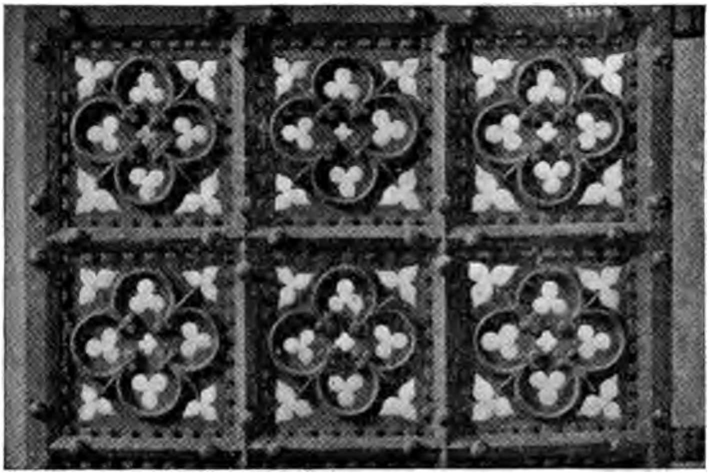


FIG. 2

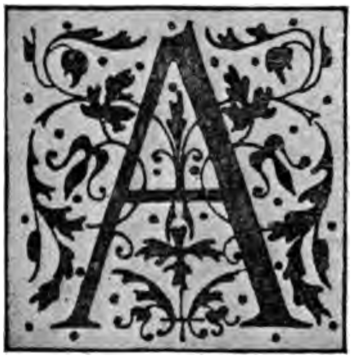


FIG. 3

8–9 Make a design for the cover of a book, using as a motive some conventionalized plant form.

10 Copy fig. 3, enlarging slightly.

GEOMETRIC—INSTRUMENTAL

Show all working lines

11–12 Draw the plan, elevation and real shape of the section of a hexagonal pyramid cut by a plane at an angle of 60° to the axis.

13 Draw the developed surface of an obliquely truncated square prism.

14–15 Draw the plan and elevation of a circular disc, perpendicular to the top plane and at an angle of 45° to the front plane.

University of the State of New York

High School Department

159TH EXAMINATION

WORD ANALYSIS

Tuesday, June 13, 1899—9.15 a. m. to 12.15 p. m., **only**

Answer 10 questions but **no more.** *If more than 10 are answered only the first 10 answers will be considered. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.*

1 Separate *each* of the following words into prefix, stem and suffix, giving the meaning of each separate part: *euphony*, *unhealthy*, *inanimate*, *interment*, *adjective*. Justify your analyses by writing sentences in which these words are correctly used.

2 Give *five* words derived from the stem *duct*. State the differences in meaning of these words and show how these differences depend on prefixes or suffixes.

3 Give *three* variant forms of the prefix *sub*. State under what circumstances each is preferred to *sub*. Write sentences in which words containing *four* forms of *sub* are used.

4 Explain by analysis how the words in the following pairs differ in meaning, and use each word correctly in a sentence: *proceed*, *precede*; *accept*, *except*; *elect*, *select*; *decided*, *decisive*.

5 Give the meaning of each of *five* of the following prefixes: *de*, *dis*, *per*, *ad*, *pen*, *ob*, *trans*. Write sentences containing words formed by using the five prefixes selected.

6 Write a paragraph using correctly *three* words from the stem *dict* and *two* from the stem *fid*.

7 Write sentences containing words that bring out *two* different shades of meaning of *jur*; *three* of *grad*.

8 Show by analysis the idea common to the following pairs of words: *recede*, *recess*; *reflect*, *reflex*; *agent*, *actor*; *affluent*, *influence*; *prefer*, *proffer*. Point out the differences in meaning.

9 Analyze the following words, giving the meaning of each part: *infliction*, *infraction*, *confined*, *tarnish*, *enumerate*. Write sentences in which these words are correctly used.

10 Give an analysis of *each* of the following words: *meridian*, *emigrate*, *enormous*, *exorbitant*, *manufacture*.

11 Write a paragraph using correctly *three* words formed from the stem *leg*; *two* formed from the stem *sen*.

12 Give the meaning of the stem in *each* of the following words and use each word correctly in a sentence: *centurion*, *complacent*, *corolla*, *superfluous*, *differ*.

13 Show by analysis the meaning of *each* of the following: *commit*, *dismiss*, *message*, *promise*, *demise*.

14 Give the meaning of the stem in *each* of the following words: *exclude*, *ancestor*, *clamor*, *incorporate*, *courier*.

15 Show how the suffixes in the following words affect the meaning or use: *nearness*, *abridgment*, *winsome*, *lightly*, *bracelet*.